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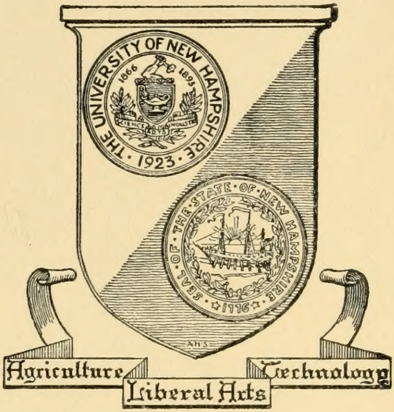

The University
of
New Hampshire

STATE

OF

NEW HAMPSHIRE.

ANNUAL REPORTS,

1887.

Vol. II.

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

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REPORT

OF THE

ADJUTANT-GENERAL

OF THE

STATE OF NEW HAMPSHIRE,

FOR THE YEAR ENDING

MAY 31, 1887.

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

ADJUTANT-GENERAL'S REPORT.

State of New Hampshire,
Adjutant-General's Office,
Concord, May 31, 1887.

His Excellency the Commander-in-Chief, and the Honorable Council:

Gentlemen, — I have the honor to present herewith the annual report of my department for the year ending May 31, 1887. During the past year there have been an unusual number of changes in the New Hampshire National Guard, three companies having been disbanded, and three new companies organized to fill vacancies. The disbanded were as follows: Company D, First Regiment, Exeter, April 16, 1887; Company H, First Regiment, Great Falls, March 11, 1887; Company C, Second Regiment, Winchester, March 11, 1887. The new companies organized in place of the above were, Company D, First Regiment, Dover, May 12, 1887; Company H, First Regiment, Manchester, April 30, 1887; Company C, Second Regiment, Nashua, April 30, 1887. The causes of the disbandments were failure to reach, or to keep up to, the standard of excellence required, impossibility of getting good material for commissioned officers, general loss of interest, together with, in one case, the lack of proper armory accommodations.

While it is disagreeable to have to disband companies for any of the above reasons, particularly when there is strong opposition arising from local pride on the part of the citizens of the town, I am firmly of the opinion that unless a company can attain and keep a *reasonable* standard of excellence, it should be summarily disbanded. There are always applications on file for permission to organize new companies, and the State has a right to expect in return for the outlay for military purposes, that the troops shall always be in an efficient condition, ready for any service, whether to guard property in case of large fires, to quell mobs, or on the border.

The new companies are composed of good material and start under very favorable auspices, with the exception that it is unfortunate that the dates of their organization are so near the date fixed for the annual encampment (May 31), as it will be impossible for them to make as good showing as they undoubtedly would if they could have a few months for drill and preparation.

Company H, First Regiment, of Manchester, is composed entirely of French-Canadian citizens, the first company of the kind ever organized in the State. It has a very strong support and the members have been drilling constantly and evidently intend to make a favorable impression at camp.

The brigade organization is the same as last year, three eight-company regiments of infantry, one troop of cavalry, and one four-gun battery, with a total strength of 107 officers and 1,145 enlisted men.

UNIFORMS AND EQUIPMENTS.

Steps should be taken at once toward providing new uniforms for the infantry; those in use were issued ten years ago and are worn out. The trousers are in particularly bad condition, and it is only by constant patching and repairing that they can be worn at all.

The time has come when it is imperative that the troops be furnished with new clothing, and a comparatively cheap service uniform should be provided. There is a growing tendency on the part of the States, north and south, to keep up an efficient National Guard, not for show but for business; to discard the obsolete swallow-tailed coats, epaulets, plumes, etc., and adopt a uniform modeled after the United States pattern. The State of Maine has recently done this, and it is what New Hampshire should do. Officers and men have worked hard to bring about the present state of efficiency, and there is nothing that would put more life and ambition into the force, and create more enthusiasm, than a neat, comfortable service uniform. It is not possible out of the present appropriation to provide new uniforms; the whole amount is required for the purpose for which, as I understand it, it was originally designed,—the ordinary expenses of the New Hampshire National Guard, such as transportation and pay-rolls for encampments, pay-rolls for inspection, officers' drills and parades required by law, armory rents, allowance for rifle practice, etc., and I respectfully and urgently recommend that a special appropriation be made for the purchase of new uniforms at once, or that an annual appropriation be made for the purpose of gradually providing new uniforms, and for keeping them and the arms and equipments in repair.

ENCAMPMENT.

The annual encampment for 1886 was at the state camp-ground, Concord, for five days commencing June 15. The troops were ordered into camp at this date that they might be present and parade at the unveiling of the Webster statue, June 17. The brigade made a fine appearance, as usual, receiving many compliments for its military bearing and marching.

As Chief Marshal of the parade, I desire to express my appreciation of the efficient service rendered by the volunteer brigade signal corps, in transmitting messages during the formation of the line. The members of the corps were, Captain Richard M. Scammon, A. D. C., Brigade Staff (since promoted to Lieut. Colonel First Regiment), 2d Lieut. Albert N. Dow, Company D, First Regiment (since promoted to Captain and A. D. C., Brigade Staff), Sergeant A. L. Carlisle, Corporal Daniel W. Robinson, privates Gustave Huth, and Joseph Perkins, all of Company D, First Regiment. As the members of the corps were volunteers who had perfected themselves in the signal manual in addition to attending to their regular duties as officers and soldiers, I think they are entitled to much credit for their proficiency, and that their services are entitled to recognition. The usual review of the brigade by the Commander-in-Chief took place June 18, and was excellent, but a slight shower necessitated a shortening of the ceremony. The regular camp inspections were made by Brig. Gen. Elbert Wheeler, Inspector-General, and Major Frank W. Russell, Assistant Inspector-General, whose reports accompany this, and to whose suggestions and recommendations your attention is respectfully invited.

The usual application to the War Department for an officer of the army to be present during the encampment, resulted in the detail of Lieut. Col. Henry W. Closson, Fifth Artillery, a cultivated gentleman and keen observer; a copy of his report to the Adjutant-General U. S. A., showing the result of his observations, is herewith forwarded.

The many improvements at the camp-ground made previous to the encampment seemed to be appreciated by the officers and men, and the general appearance of the ground, certainly, was much better than ever before. The guard had comfortable quarters, and the supply of water was plentiful, each regimental and company cook-house being supplied by pipes direct, and for the first time the horses of the cavalry and artillery were watered at troughs in their own camp, instead of having to be taken a half-mile or more to the river. The convenience of the new arsenal was fully appreciated by me in the issue and receipt of camp equipage, and a large amount of teaming was saved as well as wear and tear of tents. The old building which has been used as a stable at brigade headquarters, and which was a very unstable affair, blew down last winter, and I am having a new building erected which will be finished in time for camp, and will be substantial and convenient. The assistance of Capt. Louis C. Merrill, Brigade Quartermaster, has been invaluable to me, in preparing plans and specifications, and in making contract for the erection of the stable, and I desire to acknowledge my indebtedness to him for the same, and for his many valuable suggestions, and for the personal supervision he has given the work. I am also under obligations to Lieut. Col. George Cook, Medical Director of the brigade, for valuable suggestions regarding and personal supervision of the building of permanent sinks at brigade headquarters and for the guard. Before another encampment, stables and sinks should be built for each regiment, and for the artillery and cavalry.

INSPECTIONS.

The armory inspections for 1887 were made during the months of March, April, and May, by the Inspector-General, assisted by Maj. Frank W. Russell, Assistant Inspector-General, and the report of the same is respectfully forwarded for your information. I was present at the inspection of several companies, and while in some cases the appearance and drill were good, the fact was plainly evident in others that some of the men in the ranks had received little or no instruction. From my acquaintance with the captains I am satisfied that this was due to one of two causes, — either the men had neglected to attend drills, or had been so recently enlisted that there had not been sufficient time for them to become acquainted with even a part of the manual. Captains make a great mistake when enlisting men just before an inspection or tour of camp duty. They should understand that, except in rare cases, such recruits handicap them and their command. It is far better for them to parade a smaller company of fairly well drilled men than a larger company a portion of which have no conception of what they are expected to do when an order is given. With regard to men who attend drills only often enough to escape being dropped as deserters, I would advise captains to discharge them, as they are, from their example, even worse than raw recruits. It is possible that a return to the old system of requiring a certain number of drills in each year would improve matters somewhat, but I have not much confidence in that method; if men will not drill from pride in their company, or from a desire to become proficient in the manual and company movements, I have little faith that any law making drills compulsory could be made so strong that it could not and would not be evaded.

RIFLE PRACTICE.

For the first time in the history of the New Hampshire National Guard, regular, systematic rifle practice has been introduced, under the efficient direction of Maj. William H. Cheever, Inspector Rifle Practice, and with excellent results. Major Cheever is an enthusiastic rifleman, and has devoted much time and study to his department. His report, which is appended, is respectfully submitted for your information. The marksman's button, a small, oblong, nickel-plated badge, with a "Blunt target" in black on its face, and bearing the figure "3" in one corner, has been issued to such officers and men as have qualified as third-class marksmen. Seventy-one qualified in the brigade, which is certainly a good showing for the first year, considering the difficulties many companies meet in trying to secure good ranges.

GENERAL REMARKS.

The new record of New Hampshire soldiers of the late war is being pushed as fast as possible. Leonard A. Morrison, A. M., of Windham, has been engaged exclusively and constantly upon the work, and I have given it my personal attention whenever the regular business of the office has permitted, but it cannot be hurriedly done and done properly. My aim is to make the record as nearly perfect as possible, and to avoid some mistakes which, it seems to me, other States engaged in the same work have made. It will take nearly, if not quite, two years to properly complete and verify the record, and I recommend that the appropriation for the work be continued for the next two years.

I consider it my duty to call your attention to the unsatisfactory condition of the flags of the war regiments and the cases in which they are inclosed. The flags are covered with dust, are not properly displayed, and are so crowded that in some instances it is not possible to tell to which regiment they belong. The cases should be made dust-proof, the flags re-arranged, and there should be a revision of the names of the engagements in which the several regiments participated, as painted on the cases. Some names are now improperly spelled, and there are some omissions.

The following reports and papers are respectfully presented with this for your information and consideration:

Reports of Inspector-General (2).

Report of Assistant Inspector-General.

Report of Inspector of Rifle Practice.

Copy of report of Lieut. Col. Henry W. Closson, Fifth Artillery, U. S. A.

Return of the New Hampshire National Guard, showing location and strength of each organization.

Register of commissioned officers May 31, 1887.

Report of resignations and discharges of commissioned officers during the year.

Report of commissions issued during the year.

Report of enlisted men dropped as deserters.

I have to express, in closing, my appreciation of the courtesy with which I have been treated in my official intercourse with your Excellency and the Honorable Council.

Very respectfully,
Your obedient servant,
AUGUSTUS D. AYLING,
Adjutant-General.

REPORTS OF INSPECTOR-GENERAL.

STATE OF NEW HAMPSHIRE,
INSPECTOR-GENERAL'S OFFICE,
NASHUA, July 17, 1886.

GEN. A. D. AYLING,
Adjutant-General, Concord, N. H.:

SIR, — In obedience to paragraph 3, General Orders No. 3, A. G. O., dated Concord, April 15, 1886, I have the honor to report the result of my inspection of the First Brigade, New Hampshire National Guard, while in camp from June 15 to June 19 inclusive.

All the organizations reported in camp promptly, and upon breaking ranks took immediate possession of their tents, all of which, including those at brigade headquarters, had been carefully pitched in advance by details from the several companies, under direction of Colonel Patterson, Third Regiment. This made it possible to take up the regular routine of duty at once, and the opportunity was well improved.

The army was ably represented by Col. Henry W. Closson, of the Fifth United States Artillery, who was detailed by the War Department to inspect the camp in its behalf. He was a keen observer of all details, and ready at all times to give that information which makes the presence of an officer of the army so desirable.

It required but a casual glance to see the marked improvement made upon the camp-ground during the past year. The parade was as level as could be desired, the turf was in excellent condition, the old cook-houses had been replaced by very commodious and convenient new ones, and, last but by no means least, the introduction of city water in so convenient and bountiful a supply contributed wonderfully towards the comfort and welfare of the brigade. The new State Arsenal building also, besides being a model of convenience of itself, provided quarters for the guard which made pleasant the tour of guard duty to many who heretofore have considered it irksome. I am sure I voice the feeling of the brigade in saying that all appreciate the efforts you have put forth with such success for the benefit of all concerned, including the State itself. I have no doubt that what has been done will prove wise pecuniarily, saving, as it will, large expenditures formerly necessary for transportation, water supply, etc. I feel it to be due you directly here to thank you in behalf of the National Guard for the interest you have so effectively taken in this matter, and believe you will be repaid by better service on its part, if that be possible.

The plan of the camp was substantially the same as last year, as was the routine of duty prescribed.

My inspections of police were all informally made at various times, and were usually very satisfactory. Refuse matter from the cook-houses in some cases was buried, in others was removed by teams. Sinks were remarkably well cared for, as a rule. Quite an accumulation of manure and other matter was allowed to remain in front of the battery stables until it became offensive.

The state tents were in good condition, and were well cared for. Upon breaking camp they were immediately removed by the men to the arsenal building, obviating the necessity of providing other transportation.

Subsistence was furnished mainly by caterers, as in years past, and was reasonably satisfactory. In a few cases, companies provided for their own tables, at a saving of expense and an improvement of quality.

The weather was rainy nearly a day and a half during the tour, preventing the routine of drill laid down, and so impairing the value of the camp very materially. Days and nights were very comfortable otherwise, and of the very best for the hard work that all are so willing to give in the camps of these days.

The health of the brigade could hardly have been better. The morning reports indicate in the whole brigade but one man sick on the 16th, two on the 17th, and three on the 18th, no man being so reported two days in succession, all of which speaks well for the Medical Department, as well as for the weather and other appointments.

TABLE OF STRENGTH AND ATTENDANCE.

ORGANIZATION.	Present.						Absent.			Aggregate.	Percentage of attendance.	Percentage of 1885.	Percentage of 1884.
	Officers.			Enlisted men.									
	Field and staff.	Line.	Total.	Non-com'ission-ed officers, musicians, and privates.	Band.	Total.	Officers.	Enlisted men.	Total.				
Brigade Officers .	10	....	10	5	....	5	..	..	..	15	100	82	100
First Regiment ..	8	22	30	233	24	257	2	84	86	373	77	81	81
Second Regiment	9	22	31	222	24	246	2	111	113	390	71	68	81
Third Regiment..	9	22	31	241	24	265	1	95	96	392	76	77	81
First Battery.....	..	4	4	66	..	66	..	2	2	72	97	86	90
Co. A, Cavalry...	..	3	3	48	..	48	..	1	1	52	98	94	100
Totals	36	73	109	815	72	887	5	293	298	1,294	77	77	83

The average attendance for the five days is given in the above table, showing improvement in some organizations, loss in others, and the same general average as last year. The complete brigade staff was present. The new non-commissioned members proved the wisdom of their selection, and made themselves very useful. The three bands showed a maximum of strength present, as last year, which is quite remarkable. They all contributed largely by good music, at brigade and regimental headquarters, toward making the tour pleasant.

The ceremonies of guard-mounting were more or less faulty on the part of the guard, officers, and men. This could hardly be avoided by men who had been enlisted (as I discovered not a few had been) within a month of coming to camp. Details for guard were apparently made with the purpose of giving these inexperienced and untaught men this duty, leaving those who had been longer in the service for drills, the inevitable result of which was to make this ceremony and the performance of guard duty appear to bad advantage. Some officers of the guard, who could not plead a recent commission as an excuse, showed such ignorance of the details of the ceremony, as to demonstrate clearly their poverty of interest and effort towards qualifying as officers. It is a wonder to me that any one with an average amount of common sense will allow himself to be disgraced by remaining in an office the duties of which he so manifestly does not fulfill. So clearly is it true that the National Guard is handicapped to a considerable extent by officers who are a constant discouragement to those under as well as over them, that I am impelled to advise again the establishment of an examining board who shall rigidly and impartially pass upon the qualifications of all officers before promotion; and in addition, I would recommend amending the law to require officers to appear before said board whenever summoned by the Commander-in-Chief, and if found to be not meeting the reasonable requirements of his office, he shall be discharged, all commissions issued after such amendment is passed to have a proviso inserted to that end. If commissioned with this express understanding, the constitutionality of such a discharge cannot be raised. This will make it possible to rid the service speedily of those who hold office for the so-called honor of it without exerting themselves to maintain or increase it, and will have a most salutary effect upon the occasional do-nothing, who is unmoved by general reports from this office which mention him in every way except by name.

Guard duty was more intelligently performed than ever before, and would have been very generally satisfactory if so many recruits had not been detailed. Several men were noted so recently enlisted as to be ignorant of the several positions in the manual prescribed for sentinels, also the salutes. Great efforts were made by Captain Scammon, A. D. C., who was detailed to instruct them as to their duties, also by the Officers of the Day, to give them such an insight into necessary points that they would prove of value as sentinels, and in most cases they were very successful. When we consider the burden thus put upon instructors and others which should be borne by company officers, and when we see sentinels, and soldiers in other departments of work as well, displaying such ignorance as a recruit necessarily must, thus impairing the usefulness of the force and creating in all minds an unfavorable impression, I am very decidedly of the opinion that means should be put in operation to prevent the enlistment of men within thirty, or, better, sixty days prior to encampment. If this were well understood, men contemplating enlistment would do so in season to learn something before going to camp. Or it might be well to require would-be soldiers to drill for a stated time with the company before enlisting. This is the custom in some cases already and is apparently a good one.

Brigade dress-parades were had every evening, and were remarkable for excellence in nearly every particular. The steadiness of the men was noticeable, scarcely any errors were made, and little could have been done in any way for improvement. Regimental dress-parades were habitually held in the Third Regiment, to the particular credit of that organization. The First and Second Regiments did the same on one evening. Regimental guard-mountings were customary in the Third Regiment also, for purpose of instruction, but not in the others. These special efforts on the part of the Third deservedly won for it the name of "the working regiment," the constant purpose of which evidently was to make the best possible use of the opportunities for instruction afforded only when in camp. I deem this tribute but simple justice to Colonel Patterson and every member of his command, who so heartily responded to his requirements.

Of matters of administration I can only say praise. All points of detail at brigade headquarters were attended to by the brigade commander and the individual members of his staff in a manner reflecting the highest credit upon all. This was expected, and could hardly be otherwise in a staff where the prime consideration in making appointments was fitness for the particular duties incumbent upon the office. The same principle extended to the selection of all officers, and the same purpose displayed to do one's whole duty in all directions, would make the New Hampshire National Guard the equal of any organization in the country, and I have reached the conclusion that the sooner we disband every organization in which a very perceptible approach to this position is not taken, the better.

Military courtesy was an improvement over last year, failure to observe it being exceptional, and confined mainly to new men. The general purpose was evident, however, to do their whole duty as far as they understood it. Some cases were noted where men, seated or lying down, failed to rise and salute officers passing. Officers were also noted who did not respond to courtesies rendered by enlisted men. This neglect goes far to discourage men from their duty in this direction, therefore officers should be exceedingly scrupulous about it. The whole matter of military courtesy should be looked after by regimental and company commanders, in the armory and in every relation of military life, so that it shall be as familiar and natural a thing to do as to say "Good morning" to a friend. It is simply the military greeting of one military gentleman to another.

Of discipline I have only words of commendation. In no instance, so far as I am informed, was there any occasion for its rigid exercise. All duties were cheerfully performed, and the universal purpose was manifest to make the tour an unqualified success. Good order prevailed at all times, and every night was a quiet one, the one or two brief exceptions being good-natured ones, which readily yielded when properly met. Very few passes were issued, and there was hardly any leaving camp without authority, day or night.

The several signals for drills and other routine duties were most promptly sounded by the brigade bugler, and repeated by all the musicians along the line. There was some difficulty at first in making the drummers of each regiment understand their duties as prescribed for reveille and tattoo, but a very marked improvement was noticed over anything attained in years past. Roll-calls were generally well conducted, and results were immediately reported in the best organizations. Formations for drills and ceremonies were well and quickly made, of the brigade as well as of regiments.

Every organization was inspected, though in a hurried manner, in order to take the minimum of time from drills.

I was accompanied at these ceremonies by Colonel Closson, Major Russell, and Major Cheever. An attempt was evident in most companies to prepare for the occasion, but not always with success. The labor necessary to make presentable a soldier's uniform, arms, and equipments, is very slight if well understood. Captains should instruct their men fully as to the standard required, and teach them how to do what is necessary to attain it. There is no excuse for red rust on a musket, for waist-belt plates and other brasses tarnished, for dusty clothing or equipments, soiled gloves and collars, faces not shaved where it is customary, shoes not blacked, etc. To plead lack of time, or late relief from guard duty, is idle. Many find it practicable to attend to all these details; good soldiers always do, and others can. I would again call attention on these points to what was said in my last report as to credits to be hereafter given for care of uniforms, equipments, etc.

The inspection of the battery was even more satisfactory than ever. The pieces were models of brightness, and everything was in perfect order, barring a few contraband articles in two caisson limber-chests. The make-up and work of the whole battery are now so satisfactory that little but praise can be said of them. If it could be furnished with two machine guns, Gatling or some other approved pattern, it would be a long step towards effectiveness for possible future work.

The cavalry company made a very creditable appearance, the attendance lacking but one of a maximum, and he was detained at home by sickness. Its mount is very superior; its property of all kinds is in good condition. Very commendable interest is manifest in this command, which is steadily producing improvement. I was unable to witness its card drill from lack of time, but informally saw good work being done by it during drill hours.

Drills by the infantry were most faithfully attended to whenever they could find opportunity for them. Three half-days were rainy, and a day was taken by ceremonies, so that the time remaining for drill was limited. So far as opportunity for work was concerned, the camp was not a success. Without in the least questioning the fitness of doing high honor to our illustrious predecessors, it is a general cause of regret in the National Guard that so much precious time intended for drill and camp work is given so lavishly to ceremonies of no practical value. So little time was available that I was unable to carry out in full my plan of calling on every field officer to drill his command by card, though nearly every one did so. Most of them handled their regiments intelligently, in the main, and if company commanders and guides had performed their several duties in a like manner, there would have been little to criticise. It is very evident that more time should be set apart by captains in the routine work of the year for instruction of officers and guides as to their duties in battalion drill; and I take occasion here to say, that in my future armory inspections I propose to question all of them closely as to how stated battalion movements, including skirmish drill, should be performed, and what their particular duties would be. These questions will be put to lieutenants as well as captains, regarding company or division commanders' duties, and to corporals as well as sergeants, concerning the duties of guides.

It is high time that reasonable intelligence as to the whole range of duties, immediate and prospective, of both officers and non-commissioned officers was made apparent, and those who accept these positions must understand that more is expected of them than formerly. The result of this new examination will be embodied in the table of comparative standing. The inquiry will also include questions upon ceremonies and guard duty. In addition to the queries heretofore made of enlisted men regarding sentinel duty, they will be examined as to military courtesies; also upon orderly duty or the delivery of messages, verbal or written. These points are all indispensable before we shall have finished soldiers, and the time has arrived for taking them up. I trust that every captain will institute such means, by schools for theoretical instruction as well as by insisting upon correct habitual practice, that large gains will be apparent in these directions. Future armory inspections will also be varied to some extent by verbally calling at random on officers for stated movements to be immediately executed, instead of using the company drill cards as in years past.

Brigade drill was attempted once with fair success. It would have been better if previous notice had been given of it, that battalion commanders might have prepared for it a little. As it has hardly been attempted for several years, all were more or less rusty.

Signaling was performed in a most excellent manner under direction of Captain Scammon, A. D. C., and Lieut. Albert N. Dow of Company D, First Regiment (Exeter), with a detachment from that company. The new Army Code was used, and much credit is due them all for the zeal and success with which they have taken up this voluntary work.

The review by his Excellency Governor Currier was made on the afternoon of Friday. It was a success, except that during the passage in review the presence of so many new men and the limited opportunities for drill caused a somewhat uneven appearance. Salutes were fairly rendered, but in many cases too soon. Staff officers did not in all cases salute simultaneously with their commanders. The step was excellent, alignments fair, distances good between organizations but too great between ranks. The battery made an excellent appearance in passage, as did the cavalry.

On Thursday, the brigade left camp under orders to report in Concord to take part in the ceremonies attending the dedication of the Webster statue in front of the state house. At times when I was able to see it, an excellent appearance was presented, and favorable comments upon the brigade were heard on all sides.

Target practice was not attempted in camp, but explanations of details connected with future work on the range were freely made by Major Cheever, I. R. P.

Camp was struck on Saturday, after dinner, at the prescribed signal. It was done in a beautiful manner, immediately after which tents were folded and carried, with the poles, to the arsenal building. Tent floors were piled up, sundry articles of company property were stored in their respective cook-houses, or in the arsenal building, and all arrangements completed for marching out, which was soon after accomplished.

It is here due to the First and Third Regiments to acknowledge an error in my report of the camp of last year, in which I stated that they were dismissed by their colonels in camp, and companies were marched to the depot independently. I am glad to learn that I was wrong in this statement (though I was informed by what I supposed good authority) rather than to have the record stand as it was.

The tour was an exceedingly pleasant one to me personally, due in large degree to consideration shown me by General White and every member of the brigade, also to the common purpose, everywhere manifest, to make a successful camp. Progress is constantly perceptible, and efficiency is the general watchword.

I have the honor to be, sir, very respectfully,
Your obedient servant,
ELBERT WHEELER,
Inspector-General.

STATE OF NEW HAMPSHIRE,
INSPECTOR-GENERAL'S OFFICE,
NASHUA, May 27, 1887.

GEN. A. D. AYLING,
Adjutant-General, Concord, N. H.:

SIR, — In compliance with General Orders No. 2, Adjutant-General's office, dated Concord, Feb. 8, 1887, I have the honor to report as follows concerning the annual inspection of the New Hampshire Guard, lately completed.

Under the provisions of section 3 of the above order, Major Frank W. Russell, Assistant Inspector-General, reported for duty and made the required inspections at Newport, Concord, Lebanon, New London, Franklin, Pittsfield, Littleton, and Wolfeborough. His detailed minutes thereupon are transmitted herewith with those made by me upon the remaining organizations in the brigade.

Disbandments have occurred since last inspection at Exeter and Great Falls in the First Regiment, and Winchester in the Second, and at the time of completing the tour none of the vacancies had been filled.

The numerical strength of the brigade is as indicated in the following table, which also shows the percentage of attendance at inspections.

TABLE OF STRENGTH AND ATTENDANCE.

STRENGTH.	1887.			1886.		
	Officers.	Men.	Aggregate.	Officers.	Men.	Aggregate.
Brigade commander and staff	10	5	15	9	5	14
Artillery	4	68	72	2	32	34
Cavalry	3	47	50	3	44	47
Infantry	82	859	941	96	995	1091
Total force at date of inspection	99	979	1078	110	1076	1186

PERCENTAGE OF ATTENDANCE.	1887.			1886.		
	Officers.	Men.	Aggregate.	Officers.	Men.	Aggregate.
Brigade commander and staff	100	100	100	100	100	100
Artillery	100	90	90	100	100	100
Cavalry	100	96	96	67	84	83
First Regiment Infantry	100	89	90	97	84	85
Second Regiment Infantry	100	97	98	100	95	95
Third Regiment Infantry	86	84	84	97	90	93
Aggregate percentage	96	90	91	97	91	91

The following commands reported all present: Brigade commander and staff, field, staff, and band of the First and Second Regiments, Companies A and B of the First and Companies D, F, G, H, and I of the Second Regiment. Every officer was present in the First and Second, and the latter is remarkable in that but seven members of the entire command were absent.

The percentage of discharges during the inspection year was 28, and 29 per cent were enlisted. The average membership of infantry companies numbers 38 in the First Regiment, 41 in the Second, and 39 in the Third, ranging from a minimum of 35 in Companies A and E, First Regiment, to a maximum of 45 in Company B of the same command. With suitable encouragement on the part of the State, these figures would doubtless be materially increased.

Three of the companies mentioned a year ago as showing signs of disintegration were the three that are referred to heretofore as disbanded. In the others, improvement has been made, though with what ultimate result remains to be determined. The organizations which are worthy of special commendation are readily distinguishable by reference to the table of comparative standing.

Company F, Third Regiment, has evidently little desire for longer life, as the inspection report is mainly a chapter of errors. Its ordinary attendance at drills is stated as but nine or ten men, its first sergeant even was unfamiliar with his duties, not a single movement at drill was free from mistakes, no meetings are held for theoretical instruction, its membership has been reduced twenty-five per cent during the year, and if the eleven men absent from inspection owing to "indifference," as stated by the captain, were to be discharged, the aggregate would be below the minimum allowed by law. Major Russell recommends its immediate disbandment, and unless a most radical change for the better is apparent at the approaching encampment, I most heartily concur.

Three or four other companies should be reminded by their lack of credits in the table of comparative standing that continuance in the state service requires better work than they have been giving.

It will appear by the table referred to that in many companies the total of credits is not so large as last year. This is not due to a retrograde movement on their part, for the reverse is generally true, but partly to the fact that officers and non-commissioned officers were put to the additional test this year of answering questions as to their respective duties at battalion drill, their proficiency in which enters into the marking on knowledge of duties of both officers and men, and partly to a more rigid purpose to reduce the credits generally on points which have been repeatedly criticised and passed over charitably.

Records were usually in excellent form, the exceptions having no legitimate excuse but carelessness on the part of company commanders. The labor necessary to properly keep the records required by law is so slight that apologies from any but new captains rarely need be considered.

I hear considerable complaint from various sources on account of the seemingly unnecessary delays in the transmission of orders, reports, or other papers through certain headquarters. This criticism does not belong to the Third Regiment, which is proverbially prompt in such matters, or to the personal work of Colonel Gould, Assistant Adjutant-General, who religiously and quickly disposes of every detail of duty delegated to him. It is a serious grievance, however, where it exists, and one which should be immediately and permanently corrected without special mention from this office.

Company finances are reported in good condition, but in many cases at the expense of much effort in the way of entertainments, fairs, assessments, or other solicitations. In Manchester and Dover the city gives $100 a year to each organization, which materially aids in paying the armory rent. Co. A, Third Regiment, is given free use of the town hall, and Co. C, of the Third, has free use of the city hall for drills. No change of location has been made in the armory of any company. Co. B, First Regiment, is still without an armory, its property being stored here and there, and drills being held in the city hall when it is possible to obtain its use.

Company drills are only fairly well attended, though there are several marked exceptions, especially in Co. B, First Regiment, and Cos. E, G, and K, of the Second. Poor attendance is shown in Cos. E and F of the First, D of the Second, and C and F of the Third, with the inevitable results. Co. A, Cavalry, still holds its well-attended all-day drills twice a month, which are usually mounted when the weather will permit.

Theoretical instruction of officers and non-commissioned officers is a regular feature in most companies, and a good one. I would, however, advise more time given to skirmish and battalion drill duties of officers and guides, and guard duty. These are points with which more familiarity is yet needed.

The appearance of troops at the ceremony of inspection was usually very pleasing. Occasions for criticism were not lacking, but were not as numerous as heretofore. As in years past, comments were made at close of the ceremony and drill on points observed, so that instruction might be gained by those who had shown need of it. Drills were partly by card and partly in response to oral directions, with the evident advantage, for benefit to officers, in favor of using the card system. Less criticism than usual was necessary and progress in essentials was generally observable. Exceptions to this statement may be made with respect to file-closers, who too often, instead of understanding their duties and doing them, are of no use or assistance whatever to their captains. I would suggest to them to carefully read what Upton has to say to them, and to captains that they make it a subject of attention at meetings for theoretical instruction. My remarks of a year ago on these points may be helpful to some. And here I would advise captains that in addition to reading reports like this before their companies, in common with all official papers and orders published for the good of the service, they go over them carefully, section by section, so far as they touch upon matters of general criticism or instruction, at their meetings or schools of officers and non-commissioned officers, so that they may really understand them and correct their own possible faults in any direction. And if they will thus turn back to *previous* reports, many new points will be found which perhaps will be still pertinent. Such a method as this would obviate the necessity of repetitions of like criticisms by the inspector year after year.

Muskets were mainly in excellent condition with the exception in numerous cases of the heads of the hammer-screws being broken off or missing. It is a mystery why this defect is so frequent.

Uniforms are becoming shabby in many cases and provision should certainly be made for their renewal at the approaching session of the Legislature. A neat, serviceable pattern, of a model similar to that of the regular army, would be less expensive than the present style and far superior to it.

Equipments will need replacing to some extent, and I would recommend drawing these from the General Government as soon as the allowance for the coming fiscal year is available.

In neatness of appearance and cleanliness of instruments the Second and Third Regiment Bands were worthy of special mention. The Band of the First Regiment has evidently profited nothing by my criticisms in the past and here receives mention for an untidy band-room filled with tobacco-smoke, instruments on which no attempt was evident towards cleanliness, no gloves worn at inspection, and other little things showing a live-easy, don't-care disposition. It is useless to fall behind the exploded, lazy pretext of injury to instruments as an excuse for such slackness, and why a military (?) band is allowed to assume such prerogatives of superiority over all military authority itself is one of the unsolved riddles.

Roll-call from memory by the first sergeants was observed in the companies at Dover, Rochester, Farmington, Nashua, Plymouth, and Wolfeborough. I would advise all first sergeants to fix their own bayonets before forming their companies for any of the prescribed ceremonies. This allows them to give their undivided attention to their duties.

Officers worthy of special mention for freedom from criticism at drills are as follows: Capt. Geo. H. Demeritt and First Lieut. John H. Ingraham, Co. A, Capt. D. F. Shea, Co. B, 2d Lieut. Frank W. Tebbetts, Co. E, and

1st Lieut. Alfred F. Eaton, Co. K, all of the First Regiment; and the following in the Second, viz., Capt. F. W. Cheney and Lieut. Ira Stowell, Co. D, Capt. I. D. Piercy, Co. E, Capt. F. O. Nims, 1st Lieut. E. P. Kimball and 2d Lieut. C. W. Starkey of Co. G, and 2d Lieut. E. A. Shaw of Co. H.

The Battery was found in its usual most excellent condition, and little can be said but repetition of the praises which have always been its due.

A prize-drill in the manual of arms was observed with much pleasure in Co. E, Third Regiment, the medal being won by Corp'l Chas. V. Tompkinson.

Fines for absence from state duty are reported as having been collected in the past year in Co. D, Second Regiment, and Cos. H, E, and F, of the Third.

No medical officer was present at the inspection of Co. K, Second Regiment.

There has been an evident gain in theoretical knowledge of guard duty, which it is believed will show itself in the approaching encampment.

A fair start has been made in many companies in rifle practice on the range at two hundred yards distance. This work as laid out by Major Cheever, I. R. P., is well calculated to produce very useful results. Marksmen of the third class, requiring three scores of seventeen during the target season, have qualified in numerous instances, and it was the pleasure of the inspector to present marksmen's buttons to those who had won them, to the number of sixty-two. This will doubtless be largely increased in the present year, and the indications are that some will qualify in the other classes. The ideal towards which to work should be to gain proficiency under *skirmishing* conditions, in which such seemingly wonderful results in the regular army show the possibilities to be attained.

It was one of the efforts of the inspector to learn the length of time necessary for assembling the several organizations ready for active duty in case of emergency. The several captains gave times varying from two to twelve hours as sufficient for this purpose, depending upon the degree to which their men were scattered. The consolidation into battalions or regiments would of course depend upon railroad facilities, but it is evident that a large part of the force could be concentrated at a central point within twelve hours, if need be. In view of making the National Guard easily available for such duty, I would recommend that the law requiring warnings to be served at least four days in advance be so modified as to permit warning for immediate service. The necessity for this seems to require no argument.

The inspections of this year have impressed me more than ever of the insufficiency of the annual appropriation for the support of the National Guard. Lack of means absolutely essential to the well-being of efficient military organizations is fast producing an impression that the State does not appreciate the service rendered. It must now be conceded beyond any question whatever that the prime motive and ruling purpose of the National Guard of the present day is to become qualified for active service. Since the re-organization in 1878, this purpose has borne fruit in constant, rapid improvement. More work and study have been required by the State, the standard has continually been made higher, holiday soldiering, parade, and show have been made subordinate to features of actual worth, military service is no longer a pastime. My plea, therefore, is for the State to recognize these facts and make proper response to its side of the question. If the State *wants* a good military organization, simple justice requires paying a fair price for it. Lack of means caused the officers' school of instruction to be dispensed with this year; for the same reason the annual May and September field-day parades required by law have been omitted for two years, target practice has been materially curtailed, and payments of the armory rents of last year for several companies are still due. The regular drills of all companies in the State, which are held weekly in general and in many cases oftener, are entirely without cost to the State. As a matter of fact, New Hampshire *requires* every soldier who serves her to *pay hard-earned money for the privilege*, say nothing of the *time* given. He must do state duty for less pay per day than he is accustomed to receive in his regular occupation, he must furnish his own fatigue uniform, in which the most of his hard work is done, he must contribute towards the rent of the armory in nearly all cases, as the state allowance is generally insufficient, and he must give one or more evenings every week, without pay, to fit himself in drill and theoretical instruction for the wide range of duties required of him. These things are not right, and the State cannot expect continuous sacrifice of this sort. The National Guard has willingly done its part, has shown itself worthy; it now asks recognition of these facts. Every captain I have visited this year emphatically declares, in effect, that if the State would but do *simple justice* in the way of financial support, the benefits resulting would be very apparent in better attendance at drills, encampments, and all duties, and the present serious difficulty in keeping companies filled with *good* men (see average strength elsewhere) would largely cease.

In addition to the need of a more generous regular support, the time has come when new uniforms for nearly the entire force must be purchased, necessitating a large special appropriation, unless the regular allowance can be so increased as to enable a certain portion to be annually used for this purpose. Assuming, therefore, that the State realizes the necessity of maintaining a small force for possible contingences, and that it recognizes in the present brigade organization a body which has proved itself worthy the confidence of the State, my recommendations are that the annual appropriation be fixed at thirty-five thousand dollars ($35,000) instead of the present amount; that the pay per day for camp service be fixed at two dollars ($2), including subsistence, and that a monthly drill of at least one hour be required in every company, for which the State shall pay each man twenty-five cents, failure to attend which, without satisfactory excuse, shall be punished by a fine of two dollars ($2), to be collected in the present manner and the proceeds applied to the benefit of the company in which it is thus collected. I am convinced that these changes would prove of great value, and bring a needed inspiration to company commanders as well as to the faithful rank and file, and I am also convinced that without some such relief the future progress of the National Guard would be exceedingly doubtful.

My special acknowledgments are due to Maj. Frank W. Russell, A. I. G., for ready and valuable assistance in making the inspections requested. I am also indebted to the several regimental commanders and others who accompanied me during the tour, as well as to all others with whom my duties brought me in contact.

I am, sir, very respectfully,
Your obedient servant,

ELBERT WHEELER,
Inspector-General.

TABULATED REPORT OF INSPECTIONS AND

ORGANIZATION.	Location.	Date of Inspection.	Present and Absent.		Present at Inspec'n.		Absent from Inspec'n.		Percentage of attendance.	Acquaintance with law and condition of books.	Care of uniforms.	Condition of arms.
			Officers.	Men.	Officers.	Men.	Officers.	Men.				
BRIGADE Field and staff	Peterboro'..	Apr. 20	10	5	10	5	....	......	100	excel'nt	....	excel'nt
FIRST REGIMENT.												
Field, staff, and non-com'd staff	Manchester	Mar. 24	9	5	9	5	....	......	100	excel'nt	....	excel'nt
Band..............	Manchester	Mar. 24		24		24	....	......	100	....	excel'nt	poor ...
Company A......	Dover.......	Apr. 1	3	32	3	32	....	......	100	excel'nt	excel'nt	excel'nt
" B......	Manchester	Mar. 24	3	42	3	42	....	......	100	excel'nt	excel'nt	excel'nt
" C......	Goffstown ..	Mar. 22	3	35	3	21	....	14	63	good ...	excel'nt	excel'nt
" E......	Manchester	Mar. 23	2	33	2	29	....	4	89	excel'nt	excel'nt	good ...
" F......	Derry	Mar. 23	2	36	2	27	....	9	76	poor ...	excel'nt	good ...
" K......	Manchester	Mar. 23	2	37	2	36	....	1	97	excel'nt	excel'nt	excel'nt
SECONDREGIMENT												
Field, staff, and non-com'd staff	Nashua	Apr. 8	9	5	9	5	....	.. ...	100	excel'nt	....	excel'nt
Band..............	Nashua	Apr. 8		23		23	....	......	100	....	excel'nt	excel'nt
Company D......	Newport....	Apr. 21	3	35	3	35	....	......	100	good ...	excel'nt	excel'nt
" E......	Rochester...	Apr. 12	3	38	3	35	....	3	93	good ...	excel'nt	excel'nt
" F......	Farmington	Apr. 11	3	34	3	34	....	......	100	good ...	excel'nt	excel'nt
" G......	Keene.......	Apr. 20	3	39	3	39	....	......	100	excel'nt	excel'nt	excel'nt
" H......	Keene.......	Apr. 20	3	41	3	41	....	......	100	excel'nt	excel'nt	excel'nt
" I	Nashua	Apr. 8	2	42	2	42	....	......	100	excel'nt	excel'nt	excel'nt
" K......	Hillsboro' ..	Apr. 19	3	35	3	31	....	4	89	excel'nt	excel'nt	excel'nt
THIRD REGIMENT												
Field, staff, and non-com'd staff	Concord	May 2	9	5	8	4	1	1	86	excel'nt	....	excel'nt
Band..............	Concord	May 2		24		23	....	1	97	....	excel'nt	excel'nt
Company A......	New London	Apr. 26	3	38	2	25	1	13	66	fair.....	excel'nt	good ...
" C......	Concord	May 2	1	37	1	32	....	5	87	excel'nt	excel'nt	excel'nt
" D......	Pittsfield ...	Apr. 27	3	34	3	27	....	7	81	excel'nt	excel'nt	excel'nt
" E......	Plymouth...	May 3	3	41	2	37	1	4	89	excel'nt	excel'nt	good ...
" F......	Littleton....	May 4	2	36	1	25	1	11	68	excel'nt	excel'nt	good ...
" G......	Lebanon....	Apr. 25	3	38	3	36	....	2	95	excel'nt	excel'nt	excel'nt
" H......	Franklin....	Apr. 26	3	33	3	31	....	2	95	excel'nt	excel'nt	excel'nt
" K......	Wolfeboro'..	May 5	2	37	2	32	....	5	87	excel'nt	excel'nt	excel'nt
FIRST BATTERY	Manchester.	Mar. 24	4	68	4	61	...	7	90	excel'nt	excel'nt	excel'nt
CAVALRY, Co. A ..	Peterboro'..	Apr. 19	3	47	3	45	....	2	96	excel'nt	excel'nt	excel'nt

COMPARATIVE STANDING OF ORGANIZATIONS.

Care of equipments.	Personal appearance and military bearing.	Knowledge of guard duty.	Knowledge of Duties.										Credits, 1887.	Credits, 1886.	Credits, 1885.
			Inspection.		Drill.										
			Officers.	Men.	Card.	Captain.	Card.	First Lieut.	Card.	Second Lieut.	Officers' Aver'ge.	Men.			
excel'nt	excel'nt	....	....	....	...	....	..	....	..	....	....	....	22	22	21
excel'nt	excel'nt	....	....	....	...	....	..	....	..	....	....	....	22	20	21
good ...	fair.....	....	....	....	...	....	..	....	..	....	....	....	16	19	13
excel'nt	excel'nt	good ...	excel'nt	excel'nt	O*	excel'nt	O	excel'nt	4	good ...	excel'nt	excel'nt	45	45	45
excel'nt	excel'nt	excel'nt	excel'nt	excel'nt	O	excel'nt	7	excel'nt	O	excel'nt	excel'nt	good ...	45	43	43
excel'nt	good ...	good ...	excel'nt	good ...	...	excus'd	O	good ...	2	fair.....	fair.....	fair.....	34	40	37
excel'nt	excel'nt	excel'nt	excel'nt	excel'nt	O	excel'nt	..	vac'ncy	1	excel'nt	excel'nt	good ...	42	42	39
fair.....	good ...	fair.....	good ...	fair.....	O	fair.....	O	good ...	..	vac'ncy	fair.....	good ...	28	37	28
excel'nt	excel'nt	good ...	excel'nt	excel'nt	O	excel'nt	7	excel'nt	..	vac'ncy	excel'nt	excel'nt	44	45	44
excel'nt	excel'nt	....	....	....	...	....	..	....	..	....	....	....	22	22	20
excel'nt	excel'nt	....	....	....	...	....	..	....	..	....	....	....	22	22	21
excel'nt	good ...	good ...	excel'nt	good ...	5	excel'nt	7	excel'nt	8	fair.....	good ...	poor....	38	37	43
excel'nt	excel'nt	good ...	excel'nt	good ...	O	excel'nt	3	excel'nt	4	good ...	excel'nt	good ...	41	44	43
good ...	excel'nt	fair.....	excel'nt	good ...	O	excel'nt	4	excel'nt	1	good ...	excel'nt	good ...	40	43	42
excel'nt	excel'nt	good ...	excel'nt	excel'nt	O	excel'nt	2	excel'nt	7	excel'nt	excel'nt	excel'nt	45	46	45
excel'nt	excel'nt	good ...	excel'nt	excel'nt	6	excel'nt	1	excel'nt	8	excel'nt	excel'nt	excel'nt	45	46	45
excel'nt	excel'nt	good ...	excel'nt	excel'nt	O	good ...	..	vac'ncy	5	good ...	good ...	good ...	43	45	45
excel'nt	excel'nt	good ...	excel'nt	good ...	O	good ...	7	good ...	3	good ...	good ...	good ...	40	39	41
excel'nt	excel'nt	....	....	....	...	....	..	....	..	....	....	... .	20	21	22
excel'nt	excel'nt	....	....	....	...	....	..	....	..	....	....	....	21	22	22
good ...	excel'nt	fair.....	excel'nt	good ...	...	absent .	7	good ...	8	good ...	good ...	fair.....	32	37	42
excel'nt	excel'nt	good ...	excel'nt	good ...	7	good ...	..	vac'ncy	..	vac'ncy	good ...	fair.....	39	39	44
excel'nt	excel'nt	good ...	excel'nt	excel'nt	8	good ...	5	good ...	2	fair.....	good ...	excel'nt	42	43	39
excel'nt	excel'nt	good ...	excel'nt	good ...	6	good ...	..	absent .	3	good ...	good ...	excel'nt	40	40	..
good ...	good ...	poor....	good ...	good ...	8	fair.....	..	absent .	..	vac'ncy	fair.....	poor....	29	37	37
excel'nt	excel'nt	good ...	excel'nt	good ...	6	good ...	1	good ...	3	good ...	good ...	fair.....	40	41	43
excel'nt	excel'nt	good ...	excel'nt	good ...	1	excel'nt	7	excel'nt	5	excel'nt	excel'nt	fair.....	41	43	44
excel'nt	excel'nt	fair.....	excel'nt	good ...	5	good ...	..	excus'd	..	vac'ncy	good ...	fair.....	38	37	..
excel'nt	excel'nt	excel'nt	excel'nt	excel'nt	...	....	..	....	..	....	excel'nt	excel'nt	45	46	45
excel'nt	excel'nt	good ...	excel'nt	good ...	O	excel'nt	6	excel'nt	8	good ...	excel'nt	good ...	42	40	39

* Movements as orally directed.

REPORT

OF

ASSISTANT INSPECTOR-GENERAL.

Assistant Inspector-General's Office,
First Brigade N. H. N. G.,
Plymouth, July 29, 1886.

The Assistant Adjutant-General,
First Brigade N. H. N. G., Peterborough:

Sir, — In obedience to the requirements of paragraph 5, General Orders No. 6, current series, headquarters First Brigade N. H. N. G., I have the honor to submit the following report of duty performed, under paragraph 1 of the same order, at the state camp-ground, Concord, during the encampment of the First Brigade N. H. N. G., June 15 to 19, 1886, both days inclusive.

June 15. Upon reporting to the Brigadier-General commanding, at 11 o'clock a. m., I found that although rain had fallen continuously during that morning, and the greater part of the two days previous, the tents of the troops had all been pitched under the direction of Col. J. N. Patterson, Third Infantry, by the detail provided for in paragraphs 6 and 7, General Orders No. 3, current series, headquarters First Brigade N. H. N. G. Their arrangement did not differ from that of previous seasons, except that in the infantry the tents of each wing (six to a company, pitched in one line) faced outward from the general parade of their regiment. At brigade headquarters the tents were all up, with the exception of the marquee and mess tent.

The entire brigade staff was present, except Maj. Wm. H. Cheever, Inspector Rifle Practice, who, on account of his own serious illness, was unable to report until later.

The Adjutant-General of the State was in camp, and the Inspector-General arrived there before noon.

The only troops in camp at this time were the First Battery of Light Artillery, Troop A Cavalry, and Company F (Littleton) Third Infantry. Before 12 M., however, the Third Regiment of Infantry (seven companies) marched in, quickly followed by the Second and First. Commanders of the different organizations in reporting did not conform to any uniform method.

It would be nearer in accordance with the custom of the regular service, as well as with the Army Regulations of 1881 (paragraph 1041), for the regiments to be marched to their respective color lines, the battery to its park, and the troop to the rear of its camp, and left at these points, in line, at "In place, rest," while the several commanding officers report *in person* at brigade headquarters (dismounted, unless brigade commander is mounted) the arrival of their commands.

Dinner was served promptly at 12 M. at brigade headquarters, but was later in some portions of the camp.

At 1 P. M. a detail was made from the infantry of two lieutenants, one sergeant, three corporals, one musician, and forty-eight privates for a brigade guard, and undress guard-mount, in overcoats, took place at 1.30 P. M., under the direction of the Assistant Inspector-General.

The details from the First and Second Infantry were slow in arriving on the line whose right was marked by the staff officer. They did not start at all till ordered to do so, and, once in motion, pursued devious routes in approaching it, that from the Second taking in brigade headquarters on its way. When officers and non-commissioned officers were ordered to the front and center, many of them were in doubt as to their proper positions. The officers of the guards should advance from the posts they take when halting their details, two yards in front of center, closing toward each other until they stand, elbow to elbow, three yards from the staff officer; the non-commissioned officers pass from the line of file-closers either around the flank next them, or through the interval between the platoons, whichever is nearer, and form in one rank, according to seniority, from right to left, three yards in rear of the officers of the guard, touching elbows. In returning to their posts the non-commissioned officers face about, move forward till they reach the line of the front rank, when they turn to the right and left, the right guide taking his place on the right of the front rank, the guide of the second platoon in the interval between the platoons, the file-closers passing around the flanks to their posts three yards behind the rear rank.

The staff officer inserted the obsolete phrase "about face" in the preparatory command for returning non-commissioned officers to their posts.

During the inspection men from the different commands crowded upon the guard so closely that the brigade commander directed the details to be returned to their regimental parades and the ceremony commenced anew.

Spectators at guard-mount, whatever their rank, ought to place themselves in the rear of the officers of the day, or an equal distance (sixty yards) from the flanks of the guard, where they will not obstruct its movements or attract the attention of the men in the ranks.

At the first formation of the guard, four men appeared without overcoats, in their dress uniform. A sergeant of the First Infantry marched on in the front rank of his detail, instead of in the line of file-closers (Par. 818, Tactics). Several men were without gloves. Whenever troops turn out under arms, gloves should be worn.

The second formation was much more promptly and correctly made than the first.

In correcting the action of certain of his men during the inspection, the senior officer of the guard, although apparently quite familiar with his duties and desirous of discharging them properly, used the expression, "Bring the hammer to the safety notch, *please*," repeatedly. This word is undoubtedly required by common courtesy in ordinary social intercourse, but it should not form a part of any *military* command or caution, and its use therein savors of a discipline modeled after the standard of "H. M. S. Pinafore," rather than the directness which ought to mark all communications between soldiers on duty.

The junior officer of the guard was none too well informed concerning his functions, although commissioned more than a year ago.

Many men in ranks were evidently recruits, or, in any event, those who, however long in service, had not received proper instruction, and were generally unsteady, gazing about, holding pieces incorrectly at "order arms," etc. The behavior of all soldiers at guard-mount ought to be as exact as at parade or review, the "position of the soldier" being strictly maintained and absolute silence preserved. The guard was marched direct to the guard-house, and the field officer of the day, Maj. P. A. Devine, First Infantry, caused sixteen sentinels to be posted, viz.: one each at the guard-house and main entrance, the two other entrances, the color line, colonel's tent and rear of cook-houses in each regiment, four around brigade headquarters. The battery furnished its own stable and park guard, and the troop its own stable guard.

There was no drill in the afternoon, the time being chiefly devoted to policing, though many members engaged with evident relish in ball-playing on the parade ground.

At 5 P. M. undress-parade took place in the company streets. I did not see the field music of any regiment, except the Third, take position and sound off as prescribed in paragraph 813, Tactics. The guard was not paraded at *retreat*. It is the duty of the commander of the guard to parade it at reveille, retreat, and tattoo, and also during parades and reviews. No evening gun was fired.

At inspection of the camp at 5.30 P. M. the ground was in fair condition, considering the unpleasant weather, but some rubbish remained in the vicinity of nearly all the cook-houses. The rain, which had drizzled more or less throughout the day, ceased about 6 P. M.

Tattoo roll-call was attended throughout the entire command, but earlier than the prescribed time. The *assembly* is the signal for forming the company in ranks and calling the roll (Par. 835, Tactics). The field music of the First Infantry was slow in assembling to beat the marches prior to *tattoo*, and that of the Second did not turn out at all. General Orders No. 8, current series, brigade headquarters, contains explicit directions for sounding and repeating all the calls, and it is not apparent why there should be any difficulty in complying with them. The manner of conducting this roll-call varied widely in the different companies.

At all the established roll-calls the lieutenants ought to report in person to their captains. The first sergeants should form their companies in two ranks facing to the right, with the same accuracy that would be required at formations under arms. The roll-call completed, the company commanders (in the infantry) upon receiving the reports of their first sergeants at once report the result of the roll-call to the adjutant, who immediately transmits it to the regimental commander (Par. 814, Tactics).

The delay of a contractor in delivering the straw bought by the brigade quartermaster gave rise to complaint in some companies, but before *taps* a sufficient quantity was procured.

The signal to extinguish lights was generally obeyed, and the camp was reasonably quiet during the night.

June 16. National flag hoisted and morning gun fired promptly at 5.45 A. M.

Weather cloudy, but it cleared about 8 A. M. and continued fine during the day. Lieut. Col. Henry W. Closson, Fifth U. S. Artillery, the officer of the regular army detailed by the War Department to inspect the camp, arrived at 8.30 A. M. I accompanied the Inspector-General in inspecting the camp about 8 A. M. The ground was in excellent condition, with the exception of some straw and rubbish at the battery stable and near the fence on the east side, which should have been removed earlier. As the State controls a strip of ground ten feet wide outside this line of fence, all the refuse ought to be dumped there and the space between the cook-houses and the fence kept perfectly clean at all times.

The brigade commander directed ball-playing to be limited to the northern half of the parade grounds.

Brigade guard-mount was in full dress, under the direction of Maj. Daniel B. Donovan, Judge Advocate, Maj. Nathan H. Randlett, Third Infantry, being field officer of the day.

The detail from the Third Infantry marched out before the adjutant's call, and was returned to its own parade. The regimental guard details should start for the brigade parade when the band stationed there commences to play, and not before.

The staff officer gave the command "Front and rear rank, count fours," instead of "Count fours." The officers of the day took position opposite the right center, instead of the center of the guard. In wheeling to the right the first platoon broke badly, and at the completion of the wheel its chief posted his guide at the pivot instead of the marching flank. The guard was started on the march in review with the guide *left* instead of *right*. After breaking into column of fours, the leading guide kept his piece at a carry when the guard was at a right shoulder. In a column of fours the sergeants should carry their arms the same as the men (*Letter A. G. O., Nov.* 20, 1877). The old guard was formed too near the main entrance. It should be paraded sufficiently far from it to allow the new guard to complete its change of direction before arriving opposite its left. One man in the rear rank of the old guard wore a citizen's overcoat. The guard-house was in good order, except the floor of the upper room, which was littered with straw from the bunks.

At morning drill-call every organization in camp was out promptly and put in two hours of hard work. The field music of the brigade was assembled at headquarters at 10 A. M., and instructed by the brigade commander in person regarding their duties. The drum major of the Third Infantry was directed to take charge of their practice and conduct it during drill hours daily.

The brigade mess was honored at dinner by the presence of the Commander-in-Chief and Brigadier-General Williams, Q. M. G., of his staff. These gentlemen afterwards made the tour of the ground in a carriage, accompanied by the Adjutant-General.

At 2 P. M. the infantry of the brigade was formed in line of masses and exercised in the evolutions of the brigade for an hour or more by the Brigadier-General commanding. The movements attempted were mainly formations in line of masses and column of masses, with deployments from them into line. This drill was valuable in showing how little the battalion commanders and the brigade staff know of brigade evolutions, it being difficult to say which of these two classes of officers was the more poorly versed in its duties. If a brigade drill is to be a feature of the next camp, it will require close study on their part to insure its successful performance.

At 4.15 P. M. the Third Infantry turned out for inspection, which was made by the Inspector-General, accompanied by Colonel Closson.

Its formation was quick and correct. When arms were presented, the *ruffle*, to which the rank of the inspector entitled him, was omitted. The time being limited, there was no separate inspection of dress and general appearance. Pieces varied greatly in condition; occasionally one was found in fine order, but in very many instances the men had evidently made no effort to clean them. All of them were serviceable, however. In most of the companies equipments were not clean, Co. H. (Franklin) being a notable exception to this rule.

The brigade dress-parade this evening was an excellent ceremony.

Police of camp-ground at inspection about 7.30 P. M. was good. Tattoo roll-call was more uniformly observed than last evening and taps was generally obeyed.

June 17. Morning broke cloudy and sultry. This state of the weather continued until about 2.30 P. M., when rain commenced and fell with slight intermission till 9 P. M.

Inspection of camp-ground at 7.30 A. M. showed it to be well policed, with the exception of large heaps of soiled straw in the battery stable-yard. The battery commander stated that he had made application to the proper authority for teams to remove this straw, but they had not been furnished.

At 9 A. M., Troop A, Cavalry, was promptly in line, mounted, for inspection. When arms were presented to the Inspector-General, the single trumpeter present, who wore his trumpet slung at his breast instead of his back, failed to sound a *flourish.* The horses were generally of fair size, in good working condition, and well groomed, the sabers, belts, and horse equipments well cleaned, and uniforms well kept. At "Carry saber" many troopers held the wrist against the ribs, instead of resting it upon the top of the thigh (Par. 439, Cavalry Tactics). At "Present" and "Inspection saber," the blade was quite often inclined to the front instead of being vertical. Some incorrect positions of the bridle hand were noticed. Belts were frequently too loose. When the belt is sufficiently tightened to keep it above the rear buttons and over the lower front buttons, it is not only more soldierly in appearance, but vastly more comfortable for the wearer. More instruction in the school of the trooper mounted would be beneficial, and the frequent practice of the exercises prescribed in paragraph 527, Cavalry Tactics, would give the troopers better seats and more confidence when mounted. There were many absentees from this inspection, which the captain stated was due to the fact that a large number of his men were on police duty. The army regulation (paragraph 1322) concerning attendance at inspection should be enforced as far as practicable. The stable, cook-house, mess tent, and mess furniture of this command were all in excellent order. Its general condition, in view of the many difficulties inseparable from the mounted service in the National Guard, is worthy of much praise, and testifies to the competence and faithfulness of its commander, the willing support of his subalterns, and the zeal of the troopers. If this troop could be armed with a good revolver, the army "Peacemaker," caliber .45, for example, and properly instructed in its use, its efficiency would be very materially increased.

Brigade guard-mount in charge of Capt. Daniel H. Gienty, A. D. C., Maj. Jason E. Tolles, Second Infantry, being field officer of the day I did not see.

Two officers of the National Guard of Vermont, Colonel

Greenleaf and Captain Coffey, were present in camp this morning, but their stay was so very brief that our own officers were unable to extend to them the courtesies which they would gladly have done had they remained longer.

At 9.30 A. M. the First Battery of Light Artillery formed *in battery* in front of brigade headquarters for inspection. At command "Present saber," trumpets did not *flourish.* Chiefs of platoons were not six yards in front of the line of muzzles (Par. 962, Artillery Tactics).

Although one half of this battery is almost wholly new, Platoon B having been recruited and officered at Manchester since its disbandment at Concord last spring, the entire command is in excellent condition. At this inspection its carriages were newly painted and washed clean, its pieces bright, the horses of good size, well groomed, and suprisingly well trained (taking into account the few days they are in service), horse equipments and harness clean, drivers and cannoneers steady and better set up than their comrades of the infantry. One explanation of this creditable state of affairs is found in the statement of the battery commander that for some months past *four* evenings a week had been devoted to drill. The attainment of such a degree of efficiency in this arm of the service is sufficient evidence not only of the ability and energy of the captain, but also of the enthusiasm which must animate every member of his command.

At 10.30 A. M. the brigade was formed and marched to Concord, the brigade commander reporting on South Main street to the Chief Marshal, Maj. Gen. Augustus D. Ayling, prior to taking part in the parade march, which was a prominent feature of the ceremonies attendant upon the dedication of the statue of Daniel Webster. The position of Chief Marshal being filled by a *soldier*, all the details connected with the movement of the procession had been properly arranged, and the only delay which occurred was the unavoidable one consequent upon the lateness of the Boston train bearing the Massachusetts officials. The marching, alignments, and general appearance of the brigade during this parade march were excellent.

Among the independent military organizations in the procession were the Manchester High School Cadets, whose military bearing, exact distances, and spirited marching would have done credit to more experienced soldiers. Upon the arrival of his Excellency the Governor and Commander-in-Chief at the State House, the brigade was dismissed, and immediately returned to camp, reaching there at 2.20 P. M. In the march over from town, the infantry men construed the provisions of paragraph 231, Tactics, liberally, the fronts of the fours (when marching at route step) being limited only by the width of the highway, while the distances between them were anything but uniform. Some visitors were in camp during the afternoon, among them several military gentlemen from Massachusetts. The hour designated for the inspection of the First Infantry was 4.15 P. M., and that regiment formed in line on its parade promptly at that time, but the Inspector-General being on duty in the city with the Commander-in-Chief, it was dismissed by order of the brigade commander. At inspection of camp-ground at 4.30 P. M., it was well policed. Upon the cook-house of Co. H, Third Infantry, certain numerals were marked in ink. The attention of the company commander being called to the fact, they were at once removed. There was no brigade dress-parade this evening. Retreat roll-call was held in the company streets and the evening gun fired from the park of the battery at 5.45 P. M. After retreat there was a dress-parade of the Third Infantry, which was a well-performed ceremony.

During the evening the rain was so severe that the sentinels were relieved from all the posts, except those at three entrances to the camp, for two hours or more. Tattoo and taps were as well obeyed as on previous evenings. By invitation of Major Tolles, Second Infantry, field officer of the day, I accompanied him when he made the "grand rounds," and found the best instructed and most vigilant sentinels I have ever seen in New Hampshire. The sentries of the cavalry and artillery, when challenging, are in the habit of holding their sabers with the hand in *quarte* near the waist plate, the point directed horizontally to the front.

There is nothing in either Tactics or Regulations (so far as I am aware) that directly prescribes the position a dismounted sentinel armed with the saber takes when challenging; but paragraph 1160, Cavalry Tactics, distinctly states that mounted sentinels armed with the saber take the position of *guard* when challenging and holding communications, and I think a dismounted sentinel, so armed, should, when thus occupied, hold his saber in that position.

June 18. This morning dawned clear and pleasant, and the weather until sunset was simply perfect. The evening was decidedly cool, suggesting October rather than June. The morning calls were properly sounded and promptly obeyed.

At 6.50 A. M. it was my privilege, in company with the Inspector-General, to attend divine service at the tent of Rev. Daniel C. Roberts, Chaplain Third Infantry. The regiment was formed in line with its center in front of the chaplain's tent. Fatigue uniform, the proper one for the occasion, was very generally worn, but I noticed several men in dress coats; and some who wore blouses had them unbuttoned throughout, displaying a generous expanse of citizen waistcoat, which certainly did not add to their soldierly appearance. The service though brief was impressive, consisting of prayer by the chaplain, the singing of a hymn, nearly all present joining heartily therein, followed by a few well-chosen and forcible remarks from the chaplain upon that cardinal virtue of the soldier, "obedience," and closing with the benediction.

The police of the camp-ground was very good when I inspected it at 8.30 A. M.

Major Cheever, I. R. P., conducted brigade guard-mount, which was in full dress, the field officer of the day being Lieut. Col. Geo. M. L. Lane, First Infantry. This ceremony was much better performed than those earlier in the encampment, the men being steadier and the passage in review very good indeed. Two of the details were marched on the line in *double* time; a manifest error, as the band was playing in *quick* time.

The drills this morning showed perceptible improvement in all the infantry regiments. The artillery spent a large portion of the time in formations from line into battery and the reverse, all of which were well done. The cavalry exhibited commendable knowedge of the school of the troop mounted. In charging, however, the troopers should endeavor to "increase the gallop without losing control of their horses or *opening the files*" (Par. 530, Cavalry Tactics).

Gen. Simon G. Griffin of Keene, whose brilliant record as a volunteer soldier in the civil war is well known, was in camp this morning.

On riding about camp with the brigade commander after drill, wooden signs bearing company name were found upon the doors of cook-houses in two companies of the First Infantry, and the numerals marked yesterday upon the cook-house of Co. H, Third Infantry, appeared upon that of Company E, same regiment. All these were removed.

Among the guests at brigade headquarters to-day was Brig. Gen. Benjamin F. Peach, of Massachusetts, commanding Second Brigade M. V. M.

His Excellency the Governor and Commander-in-Chief (in a carriage, accompanied by his staff, mounted) arrived in camp about 2 P. M. Troop A, Cavalry, formed his escort; and on his entrance the First Battery of Light Artillery fired the prescribed salute from its park.

General Wheeler and Colonel Closson inspected the First Infantry at 2 P. M. Its formation was a good one, but hardly as rapid as that of yesterday afternoon. As soon as the regiment was in line, its colonel wheeled it into column of companies to the right without saluting the Inspector-General. The arms and equipments were in fair condition, all the pieces being serviceable, except one or two in which the ejector spring was broken.

At 2.45 P. M. the Second Infantry paraded for inspection. Its formation was well made. When arms were presented to the Inspector-General, no *ruffle* was beaten. As in the other regiments, there was no inspection of dress and general appearance, the time allowed not admitting of it. The band had been directed to report for consolidation with the others at 3.30 P. M., and was therefore inspected before the companies were. This band was the only one which had clean instruments. The arms and equipments were in good condition, and the regiment was, in my judgment, the cleanest of the three.

In *all* the regiments some men still neglect the repeated admonitions of the Inspector-General and my own predecessors, concerning the various little details of dress and personal habits, which, united, distinguish the soldier from the sloven. Company commanders should hold their non-commissioned officers responsible for these matters, requiring them to see that the members of their squads, if they come short of godliness, at least attain the cleanliness which is accounted next to it.

The uniforms of the infantry show unmistakable signs of their nine years' wear, and ought to be replaced by new ones at an early date. When this change is made it is hoped the oft-repeated recommendation of the Adjutant-General will be heeded, and that relic of antiquity, the "claw-hammer" coat, discarded for a garment similar to the one now worn in the regular service. Fatigue uniforms ought to be issued by the State, it being a most unjust expense for the enlisted men to be obliged to buy their caps and blouses as they now do.

The brigade was reviewed by the Commander-in-Chief at 4 P. M. Formations were not as good, troops were not as steady while reviewing party was passing around the line, nor were alignments as well preserved when marching in review as at this ceremony two years ago. Trumpets of mounted troops should sound while the organization to which they belong is passing the reviewing officer (Par. 1139 Cavalry, 962 Artillery, Tactics).

The brigade dress-parade this evening was a fine one, as were also the regimental dress-parades which followed it; that of the Third being remarkable for the steadiness of the men while the band was sounding off, the First showing a fine manual (especially in Cos. B and K), while the Second was worthy of notice for the accuracy of its formation. I do not think the field and staff of infantry regiments should wear their gauntlets and leggins at dress-parade. All the regiments turn out with four markers at parades and inspections, when only two are required (Par. 372, Tactics). Whenever regiments form line on their parades, the band should commence playing as soon as *adjutant's call* is sounded, continuing until the last company has arrived on the line. In our regiments it appears to be the custom for the band to commence playing *after* the markers have been posted for the color company.

Police of camp-ground was good when inspected at 7.30 P. M.

Colonel Closson left the camp about 8 P. M., having been present continuously since his arrival on the 16th instant.

As heretofore, the State was most fortunate in its inspector. Colonel Closson is an officer of long service and honorable record, well known in military circles for his professional attainments and his literary ability, and particularly well fitted for the duty required of him here, by reason of recent tours as inspector with troops of the National Guard in other States. His comments and suggestions showed him to be a keen observer and a discriminating critic, while the deep interest he manifested in everything pertaining to our force ought to be thoroughly appreciated by every member of it.

The music furnished by the different regimental bands at the brigade marquee during the evening was exceedingly enjoyable.

There was a good deal of noise in camp between tattoo and taps, which did not cease at the latter call. The field officer of the day, however, took one relief of the guard and patrolled the camp until quiet was restored. One citizen, with that scorn of danger resulting from too close communion with "inspiring, bold John Barleycorn," attempted to trifle with a sentinel and was confined to the guard-house therefor. With the exception of the first hour after taps, this night was as quiet as any previous one.

June 19 dawned clear, cool, and sunny, with a fine breeze, and the day fulfilled the promise of the morning. There was a regimental guard-mount in the Third Infantry which I did not see. The brigade guard was mounted in full dress by Capt. Daniel H. Gienty, A. D. C., Lieut. Col. Albert W. Metcalf, of the Second Infantry, being field officer of the day. This was a much better performed ceremony than any previous one I saw. After its completion (by invitation of the Adjutant-General) I visited the state arsenal in company with several other officers, finding its spacious storeroom in the most perfect order.

At this time the troop of cavalry was engaged in carrying its mattresses to the arsenal for storage, and I noticed one trooper wearing a citizen hat, and another in his shirt sleeves, with citizen hat and vest. The dress of soldiers of all grades when on duty should be the prescribed uniform, and no article of civilian clothing should be permitted. When out of their tents and not in dress coats, blouses ought to be worn and buttoned throughout.

During the morning drill hours I made an inspection of tents, finding them all in proper condition with the following exceptions:

First Battery of Light Artillery, one screw and one screw eye in tent pole, and one tent pole scarred by a nail driven through arm-rack against it.

Second Regiment of Infantry:

Co. G, one screw in tent pole.

Co. K, two nails in tent pole.

Co. D, one nail in tent pole, one screw in pole of officer's tent.

Co. E, four screw eyes in tent pole, one screw hook in pole of officer's tent.

Adjutant's tent, one nail in pole.

First Regiment of Infantry:

Several nails in pole of Drum Major's tent.

Co. C, Captain's tent torn and marked. A lieutenant of the company explained that the tent was in that condition when pitched.

Co. D, one tent torn.

Co. B, one tent torn.

Co. A, one tent blackened as if by brands from a fire.

Third Regiment of Infantry:

Band, two nails in tent poles.

Co. H, several spark holes in one tent.

Co. E, two nails in tent poles, one tent torn, one tent with spark holes, one tack in pole of officer's tent.

Co. K, one tent torn, four nails in tent poles.

Co. D, Captain's tent torn (by high wind, as he said), several spark holes in tents, one tent slightly and one badly torn, the latter done, so the captain stated, by the "skylarking" of some of his men during the present camp.

Co. F, three tents with many small holes in them, one tent marked.

Co. A, two tents marked.

Tent of clerk at regimental headquarters marked.

Some of the tents referred to as "marked" are badly disfigured, and ought, if possible, to be replaced by others when the next camp is pitched. None of the markings appeared to be recent. One tent in Company F, Third Infantry, on which was scrawled in large letters "Saint's Rest," and one at headquarters same regiment that bore an inscription denoting that its inmates were the reverse of saintly, the R. Q. M. told me had been thus defaced for three years or more.

Company F, Third Infantry, was allowed to leave camp in time to take the train north from Concord at 11 A. M.

One gun was fired from the battery at 1 P. M., when all the tent cords were loosened from the pins and a man stationed at each tent pole. At a second gun, ten minutes later, all the tents were struck (except one at brigade headquarters), and immediately carried to the arsenal by the men. The national flag was lowered, the guard relieved, and at 2 P. M. the brigade was formed in line of masses, the battalions changed direction by the left flank, column of fours was formed from the right of the leading division, and the march taken up for the railroad station in Concord.

When the battalions changed direction by the flank, the markers of the First Infantry were posted company, instead of division, distance apart, and the band of the Second Infantry was entangled with the rear division of the First.

On arriving in Railroad Square, the Third Infantry turned to the right and formed to the left into line, the First turned to the left and formed on the right into line, the Second executing the same movement in the rear of the First, while the artillery and cavalry marched direct to the freight station to load their animals and carriages. Each regiment of infantry was then embarked by its colonel.

My own experience (as an officer) in camps of the National Guard is limited to the seasons of 1884 and 1886. Comparison of the encampment just closed with that of two years ago shows a decided improvement in many respects.

The camp-ground is much better adapted to its purpose now than then, the erection of the state arsenal and permanent cook-houses, and the introduction of a supply of running water having wonderfully increased its convenience and healthfulness.

The discipline was better this year, and the personal conduct of both officers and enlisted men was above reproach. When New Hampshire can assemble twelve hundred men, representing every section of the State, and hold them in camp for five days without the occurrence of a single case of drunkenness or disorder of any description, it is a fact to which not only National Guardsmen, but her citizens generally, should be glad to "point with pride."

Military courtesy was well observed, it being the exception for enlisted men to pass officers without rendering the proper salute. Failure to do this, when it did occur, was found to be due to a lack of instruction and not to intentional neglect.

Study of general orders and armory instruction is beginning to bear fruit in a better knowledge of guard duty. It was in general well performed. The calls when sounded from brigade headquarters were not repeated at the guard-house. The musicians of the guard should do this as invariably as those of the other organizations in camp. I respectfully recommend that a guard report *book* be supplied instead of the blanks now used.

The time available for drills was unusually limited this year, owing to the unpleasant weather and the day consumed by the parade in Concord, but such time as could be obtained was fully utilized. It is very much to be regretted that the length of the annual encampment cannot be extended somewhat. At present the men hardly get settled down to their work before camp is broken, and the routine of military duty to which they were getting accustomed is abruptly dropped, not to be resumed for a twelvemonth.

Signaling was practised whenever possible by a detachment of Company D, First Infantry, under the able direction of Capt. Richard M. Scammon, A. D. C., acting signal officer.

No rifle firing took place at any time, as no range has yet been provided. It is hoped one may be established during the coming year where, to use the language of the Inspector of Rifle Practice, "Men who have become marksmen on the company ranges can qualify as sharpshooters."

The health of the command was excellent, there being no patients at the brigade hospital tent. This was doubtless due, in no small degree, to the adoption of proper sanitary measures by the efficient medical director, Dr. George Cook.

Messing arrangements seem to have been satisfactory. Some organizations provided for themselves; others hired caterers; but no complaint was heard from any of them.

The brigade mess was admirably conducted by Capt. Willis D. Thompson, Commissary.

Matters of transportation and supply were managed by Capt. Louis C. Merrill, Quartermaster, with his usual skill.

The administration of the brigade reflects credit upon its executive officer, Lieut. Col. George W. Gould, Assistant Adjutant-General. There was little or no friction. Details were seasonably made and quickly furnished, the required reports regularly rendered and promptly consolidated. I think, however, that books should be used for these reports, rather than blanks. The brigade non-commissioned staff, recently considerably enlarged, is composed of young gentlemen of spirit and energy, who were of great assistance to their chiefs during the entire encampment.

My own tour in camp was a very pleasant one, and I received most courteous and gentlemanly treatment from every member of the force whom I met, either socially or on duty.

I am, sir, very respectfully,
Your obedient servant,

FRANK W. RUSSELL,
Major and A. I. G., 1*st Brig. N. H. N. G.*

REPORT OF INSPECTOR OF RIFLE PRACTICE.

Office of Inspector of Rifle Practice,
Nashua, N. H., Feb. 1, 1887.

Maj. Gen. Augustus D. Ayling,
Adjutant-General:

Sir,—In compliance with your direction I have the honor to report the progress and work of this department since my last report (May 12, 1886) to January 1, 1887, and also to partially recapitulate the work of the entire year.

General Orders No. 14, Brigade Series, dated Peterborough, September 2, 1886, provides that "all officers and men who shall make a record of three scores of seventeen at two hundred yards during the season of 1886, prior to December 1, will be rated as marksmen of the third class," and requires adjutants and company commanders to report to the Inspector of Rifle Practice on the first of December. Such reports have been received at different times *since* the date indicated, from all except the adjutant and Company D, First Regiment, and the adjutant of the Second Regiment, showing the number of officers and men in rifle practice during the year to have been, on the range, 448; in armory, 778; and the amount of ammunition expended to have been 26,347 rounds of five-grain cartridges,—10,885 new, and 15,462 reloaded; 11,216 rounds of seventy-grain cartridges,—10,056 new, and 1,160 reloaded. The following is the list of third-class marksmen, and the aggregate of their three best scores. Best possible aggregate, 75.

ORGANIZATION.	Names.	Rank.	Score.
General and Staff....	H. B. Roby..................	Sergeant Major..	52
	H. A. Brown................	Bugler..........	51
FIRST REGIMENT.			
Company C...........	E. P. Carr....................	Sergeant	66
"	C. B. Carr....................	Corporal.........	64
"	B. W. Pattee................	Corporal.........	62
"	G. W. French...............	Corporal.........	63
"	O. L. Richardson...........	Musician.........	60
"	George W. Kimball.........	Private	60
"	J. A. Richards...............	Private	57
"	F. E. Willard	Private	56
"	L. S. Bidwell	Captain..........	58
Company E...........	George D. Sanders..........	Sergeant	55
"	Louis Schwarz...............	Private	52
"	Wilbur W. Dickey	Corporal.........	51
Company H	W. J. Andros................	First Lieutenant	54
"	Benjamin A. Goodrich.....	Private	54
"	George W. Hough...........	Private	52
SECOND REGIMENT.			
Field and Staff........	A. W. Metcalf	Lieut.-Colonel...	57
Company C...........	W. E. Hutchins..............	Private	55
"	N. W. Dickerson	Private	52
"	Charles D. Seaver...........	Sergeant.........	51
Company E...........	Fred L. Chesley	First Lieutenant	62
"	George I. Berry.............	First Sergeant...	57
"	George H. Clark	Private	52
Company F...........	E. W. Emerson..............	Captain..........	54
"	C. H. Pitman................	First Lieutenant	53
"	C. W. Leighton	Second Lieut....	60
"	G. M. Nutter.	First Sergeant...	64
"	H. C. Leighton..............	Sergeant.........	64
"	C. E. Connor.................	Sergeant.........	54
"	E. A. Seavey	Corporal.........	57
"	A. Garland...................	Corporal.........	55

ORGANIZATION.	Names.	Rank.	Score.
Company F	G. S. Yeatton	Corporal	52
“	A. I. Davis	Private	53
“	G. F. Davis	Private	51
“	W. S. Hayes	Private	52
“	G. F. Hale	Private	55
Company G	C. W. Starkey	Second Lieut	56
“	C. E. Joslin	Sergeant	53
“	F. E. Foster	Sergeant	57
“	E. M. Keyes	Sergeant	64
“	J. C. Reed	Corporal	55
“	H. W. Keyes	Private	52
“	B. H. Whitehouse	Private	54
Company K	Reuben Gregg	Sergeant	53
“	T. M. Craig	Private	57
THIRD REGIMENT.			
Field and Staff	H. B. Cilley	R. Q. M., 1st Lt	57
“	R. H. Rolfe	Sergeant Major	58
“	William O. Stevens	Q. M. Sergeant	53
“	A. M. Dodge	Com. Sergeant	55
Company C	Arthur M. Stearns	First Sergeant	63
“	Willie C. Trenoweth	Corporal	63
“	Fred R. Roach	Private	55
“	George S. Pethic	Private	58
Company D	Forest F. Hill	Lieutenant	57
“	Frank W. Brown	Sergeant	55
“	Frank W. Wheeler	Corporal	55
“	E. C. Sanborn	Corporal	55
“	E. B. Drake	Private	58
“	D. D. Hardscord	Private	59
“	F. E. Newell	Private	56
Company E	H. S. Arris	Second Lieut	58
“	E. J. Davis	First Sergeant	54
“	C. V. Tompkinson	Corporal	53
Company H	Albion W. Rollins	Sergeant	61

ORGANIZATION.	Names.	Rank.	Score.
Company H	Fred Gomo	Private	59
"	Samuel C. Miller	Sergeant	54
"	Elmer R. Silloway	Corporal	57
Troop A, Cavalry	E. H. Smith	Captain	56
"	—— Sweatt	Private	52

According to the returns Companies B, F, and K, First Regiment, Company D, Second Regiment, and Companies F and G, Third Regiment, have had no range practice, and Company D, Third Regiment, no armory practice. I repeat the recommendation made in a previous report, that towns where companies are stationed furnish suitable ranges for rifle practice, free of expense to the companies. If state legislation is necessary to enable towns to do so, then such legislation should be enacted.

I also repeat my recommendation that a permanent range of one thousand yards be established at or near the state camp-ground, where marksmen who lack the opportunity at their respective stations may practice during camp for qualification for the next higher grade. It is a matter for congratulation that during all the practice with ball ammunition no accident has happened. I wish heartily to commend the good discipline, intelligent supervision, and painstaking conformation to Tactics which have secured this immunity from disaster. I hope all the force will be in systematic range practice the coming season, and earnestly advise all commanding officers to use their best endeavor to this end.

My thanks are due you, General, for the uniform kindness and support which you have extended to me, and for the interest taken in this department. I wish, also, to express to General Wheeler, General White, and all the officers and men of the force, my appreciation of the kindness and courtesy extended to me, and of the interest taken in the work of this department. A good record has been made, and much has been gained, and the fact that much has been done at individual expense renders the result all the more praiseworthy.

I have the honor to be, very respectfully,
Your obedient servant,

W. H. CHEEVER,
Major, and Inspector of Rifle Practice.

REPORT OF

LIEUT. COL. HENRY W. CLOSSON, FIFTH ARTIL'Y, U. S. A.

FORT WADSWORTH, N. Y. H.,
July 31, 1886.

To the Adjutant-General, Headquarters U. S. Army, Washington, D. C.:

GENERAL, — In accordance with paragraph 7, Special Orders No. 115, current series, and letter of instructions War Department, Adjutant-General's office, 19th May last, I have the honor to submit the following report in reference to the New Hampshire National Guard while encamped at Concord from June 15 to June 19, inclusive.

Three regiments of infantry, one battery of artillery, and one troop of cavalry formed the brigade which came together under the operations of General Orders No. 3, from brigade headquarters.

The routine of duty was regulated by General Orders No. 8. Camp was prepared and tents pitched on Monday, the 14th, by details from the different commands detached for that purpose. On Tuesday morning the troops arrived and marched through the town to the grounds. On both days it rained incessantly, and I did not go out to camp until Wednesday morning. I witnessed the brigade guard-mounting, the battalion, battery, and troop drills of the forenoon and afternoon of that day, and was present at the inspection of the

Third Regiment by the Inspector-General, and at the brigade dress-parade of that evening. On Thursday there was the usual brigade guard-mounting, after which line was formed and the troops marched to town to participate in the ceremonies attendant upon the unveiling of the Webster statue. They returned to camp about 2.40 P. M., and subsequent rain prevented any further drill or parade for that day. During Thursday I remained in camp. A sanitary inspection was made that morning by me in company with Colonel Cook, the medical director. On Friday there was the usual guard-mounting, the battalion, battery, and troop drills for both forenoon and afternoon. I was also present at the inspection of the First and Second Regiments, and witnessed that of the battery and cavalry troops. At 4 P. M. there was an inspection and review of the whole command by the Governor of the State. This was followed by a brigade dress-parade, and this by separate battalion dress-parades of each regiment in turn. I returned to Concord that night. The forenoon of the next day (Saturday) the camp was broken up.

FIELD AND STAFF.

It was readily seen that these departments were filled by thoroughly competent and efficient men. General White, who commands the brigade, General Ayling, the Adjutant-General, General Patterson, of the Third Regiment, Colonel Copp, of the Second, Captain Piper, of the Artillery, Captain Smith, of the Cavalry, and others have honorable war records, and have served in the field, in some instances, through all grades up to their present positions, and the State feels the benefit of their experience. General Wheeler and Major Russell, of the Inspector-General's department, are graduates of the United States Military Academy. The Adjutant-

General of the State holds his office during good behavior. His position is thus made independent of any political caprice. It is, I think, only in this way that there can be secured for the education of each State Guard that unity of plan so much more preferable to a patchwork of tentatives where no project can settle itself into a system, and no idea is on trial long enough to establish its value. There must be some fixity of tenure and purpose in order that any labor may return its full reward. The Adjutant-General has also devolved upon him the duties of the quartermaster, subsistence, ordnance, and paymaster's departments. The responsibility is his, while assisted by able subordinates in the several branches. The payment of troops is made by check to the regimental paymasters, and by them by check to the captains, who pay their men. All of these officers are bonded. Each private receives $1.50 per day of actual service. Fifty cents of this is ration money, and each organization secures its subsistence to suit itself. The practical result is a caterer to every company; or where two or more come from the same locality they club together. In one instance I found the same caterer supplying six companies at twenty-five cents a meal. There was ample provision of good food, and under this system it was of course much better prepared and with far less waste than could otherwise have obtained.

The sanitary welfare of the camp was well looked after. Water is brought on the grounds by connection with the city supply. Trench privies are used, and dry soil sifted over them each day. Temporary frame kitchens, twelve by twenty-four feet, are put up on the company flanks, and in front of these are the mess-houses, temporary shelters of either wood or canvas. The vicinity of these was generally clean, and all these matters received the careful attention of the medical director.

The camp-ground is practically owned by the State, under a ninety-nine years' lease; it comprises about thirty acres, and is well located. There are upon it many temporary structures pertaining to its previous occupancy as an agricultural fair-ground, which came in very handily for stabling, etc. The camp hospital was duly provided with *personnel* and *materiel* for such contingences as were likely to occur. A permanent building of brick has been erected by the State near the main entrance, and is used as a general storeroom and guard-house.

DISCIPLINE AND INSTRUCTION.

Of the appearance of the infantry, under the close observation of regimental inspector, I could only say that it was fair. The rigidity in ranks and the impassive demeanor that are supposed to characterize regular troops were not to be expected; but neither is there any excuse for such general neglect of these points. Each company has an armory, where squad drill is practicable and should be required, and military education should no more begin with brigade maneuvers than mathematical with differential co-efficients. Details of position and carriage will certainly shape the estimate that observation forms of all troops, rather than the possible possession by them of other and higher qualities which the stress of actual service might develop. *Eyes to the front*, *mouth shut*, *heels together*, and *ears open* make the foundation on which the man in the ranks must build if he is to have any military standing whatever, and without these indices of his training he will never look like a soldier, however much he may feel like being one. The most important of all acquisitions (self-control) begins right here, where a man is taught to cover his own front only and leave the rest of the horizon to his neighbors. While the interest and sympathy of spectators should not be too summarily repressed, space for the inspections should, it seems to me, be so secured that the inspector need not be incommoded by the crowd; and a suitable margin should be set off for a framework to the battalion, that it may not be actually merged among the on-lookers.

The drilling was good. The brigade was skillfully handled by its chief, both at the ordinary exercises and in the formations precedent to Thursday's march into town. The field officers, particularly the colonels, exercised their commands freely through the school of the battalion, and were, as might have been expected, thoroughly at home in the tactics. Many of the company officers were inexperienced, and it could not be otherwise, since the companies belong to separate towns, and can only be gotten together during the five days' encampment. The greatest need of the men is a thorough setting up in elementary principles, which is perfectly practicable at their company armories. A persistent application of the first thirty pages of Tactics would be worth more than all the rest of the volume.

The parades were good. Individual defects were somewhat covered in the mass, and lost from a longer range of observation. Officers and non-commissioned officers, as a general thing, were well posted in these matters of ceremony. The brigade presented a fine appearance on the review. Alignments, wheelings, and distances were well executed and preserved; in fact, what trouble there is lies just here, not so much in absolute ignorance of details as in the concentration of all effort upon these grand occasions rather than upon the common daily work. It is natural, perhaps, to expect that the presence of the Governor, the throng of spectators, and the resounding music should enable a man to march, wheel, and dress most beautifully; but it must not be forgotten that all this has about as much relation to his real business as a tulip to a torpedo. These spectacles, however, have their value in more ways than one. They not only present the glitter of gold lace, but the gleam of the bayonet also. The padded coat may be there, but the cartridge box is behind it, and contains, at least, an inference or two that the dullest mind may draw. The battalion movements were mostly in the closed formations.

There was some skirmish drill but no target practice, and no blank cartridge practice. Skirmishing and the fire exercises are, I think, of the utmost importance, and might well monopolize the time to the exclusion of more dramatic exhibits. There is some difficulty in securing ranges at the company armories and vicinity, and the scant state appropriation, from twenty to twenty-five thousand dollars yearly, limits the ammunition supply. General Orders Nos. 1 and 4, this year's date, show that a beginning has been made in the matter of target practice from which good results may be expected.

Guard duty was performed reasonably well. There was hardly time to witness the results of the instruction given and the care exercised, of which there was no lack.

The light battery (four light twelves, piece and caisson, four horses to each) is now entirely a Manchester organization, with teams from the same locality. It is in most excellent condition, both as regards drill, discipline, and material. The manual of the piece was performed with a precision and yet entire freedom from awkwardness very desirable to secure and very seldom seen. The battery was freely exercised throughout the various tactical movements, showing a remarkable knowledge of the entire school, and reflecting great credit upon Captain Piper and all concerned. The carriage of the men, both on drill and on guard, showed the beneficial results of close and efficient supervision and instruction, reaching into details of duty and behavior that mark the true soldier, and grow out of armory work done as it ought to be done. Everything about the battery, implements, equipments, harness, etc., testified to thorough care and a knowledge to which the war experience of Captain Piper no doubt contributed, but which pertains originally to a love of and fitness for artillery service.

I was also agreeably disappointed in the appearance and efficiency of the cavalry troops. The horsemanship and drill of the men were of a very superior nature to that of such organizations generally, and form a sufficient reason for the continued existence of this particular troop. The troop is wholly from Peterborough, and is, I fancy, largely leavened with something more than traditions of the war service. It was well commanded and handled, and much of its competency is due to the fact that each man owns the horse he rides, instead of getting a casual introduction to him for the first time on the occasion of his use.

ARMS, CLOTHING, CAMP, AND GARRISON EQUIPAGE.

The infantry was armed with the Springfield rifle, caliber .45, enameled leather belt, block cartridge box, and steel bayonet scabbard, all in good condition. Each man has a knapsack, which might be dispensed with; but I saw no haversacks or canteens, which are indispensable. The uniform, or the coat at least, belongs to days and notions that are dead and gone, being of the old swallow-tail pattern, turned up with red, white, and blue for the different regiments. It has no excuse for existence, except possibly the cost of substitution. The felt dress caps are in process of replacement by helmets. Most of the men had overcoats, but each, I imagine, furnishes his own blanket. The State should provide a substantial blouse in lieu of the present coat, and leave each organization, at its own expense, to select any superfluous and picturesque adornment in the way of "full dress" which holiday parades and company *esprit* might justify. The officers, with but few exceptions, wore the United States Army uniform belonging to their rank. The supply of canvas was most ample and in very good condition. The tent floors are furnished by the occupants of the tents.

ATTENDANCE AND MISCELLANEOUS.

The morning report of the seventeenth of June (furnished me by politeness of Colonel Gould, Assistant Adjutant-General) shows strength as follows:

TROOPS.	Present.		Total present and absent.	
	Officers.	Men.	Officers.	Men.
First Regiment	31	272	32	341
Second Regiment	31	268	33	358
Third Regiment	31	288	32	392

Each battalion contains eight companies, giving a company average present in camp of about thirty-four enlisted men. About from thirty-five to forty per centum of the infantry drop out and are renewed between the successive yearly encampments. In the artillery and cavalry this percentage is much less. The light battery shows strength, present, four officers and sixty-six enlisted men; absent, two enlisted men. For the cavalry troop the figures are, present, three officers and forty-eight enlisted men; absent, one enlisted man.

The regimental organization provides for colonel, lieutenant colonel, major, adjutant, quartermaster, paymaster, surgeon, assistant surgeon, and chaplain. The non-commissioned staff comprises sergeant major, quartermaster sergeant, commissary sergeant, hospital steward, drum major, bandmaster, and deputy bandmaster. Each of the regiments has its own band of enlisted men, like those in front of whom they march, where inspiration is not so much the hire they get as interest in the work they do. The arrangement is, I think, a very commendable one, and does away with the absurdly profuse outlay for operatic complications sometimes indulged in. I notice in General Orders No. 5, the bandmaster and field music are directed "in practising music for parades and field purposes to observe the new cadence in quick time, being at the rate of one hundred and twenty steps per minute," and this was specially looked after.

Under the operation of Special Orders No. 1, special provision is made for the instruction and information of officers and non-commissioned officers by recitations and papers, and those prepared under the heads of "Conduct of officers and men in armories," "The requisites of a good officer," "Care and use of arms," and "The moral value of military discipline," cover topics most valuable for discussion and research by officers of the National Guard.

Generally, I may sum up the whole matter by saying that, with the exceptions already noted, General White and his staff could, undoubtedly, put this brigade in good order and well supplied for service into the field at reasonable notice, prepared for any emergency, domestic or otherwise. A suitable store of ammunition, I am informed, is provided at points where it can readily be made available.

The order prescribes but a five days' encampment, and half of this time was lost through unfavorable weather, but the benefit even so is great, positive, and enduring.

It would be very ungracious to omit a proper and deserved acknowledgment of the many courtesies extended me by Generals White, Ayling, and Wheeler, Colonel Cook, Majors Russell and Donovan, and Captain Thompson, to all of whom I am indebted for many most pleasant recollections.

HENRY W. CLOSSON,
Lieut. Col. 5th Artillery.

RETURN

OF THE

NEW HAMPSHIRE NATIONAL GUARD.

	Commissioned Officers.	Enlisted Men.	Aggregate.
Commander-in-Chief and Staff	11		11
Brigade Commander and Staff	10	5	15

FIRST REGIMENT. — HEADQUARTERS, MANCHESTER.

	Commissioned Officers.	Enlisted Men.	Aggregate.
Field and Staff	9	5	14
Band	......	24	24
Co. A, Dover	3	32	35
Co. B, Manchester	3	42	45
Co. C, Goffstown	3	35	38
Co. D, Dover	3	55	58
Co. E, Manchester	2	33	35
Co. F, Derry	2	36	38
Co. H, Manchester	3	55	58
Co. K, Manchester	2	37	39
Strength of First Regiment	30	354	384

SECOND REGIMENT.—HEADQUARTERS, NASHUA.

	Commissioned Officers.	Enlisted Men.	Aggregate.
Field and Staff	9	5	14
Band	....	24	24
Co. C, Nashua	3	55	58
Co. D, Newport	3	35	38
Co. E, Rochester	3	38	41
Co. F, Farmington	3	34	37
Co. G, Keene	3	39	42
Co. H, Keene	3	41	44
Co. I, Nashua	2	42	44
Co. K, Hillsborough	3	35	38
Strength of Second Regiment	32	348	380

THIRD REGIMENT.—HEADQUARTERS, CONCORD.

Field and Staff	9	5	14
Band	... .	24	24
Co. A, New London	3	38	41
Co. C, Concord	1	37	38
Co. D, Pittsfield	3	34	37
Co. E, Plymouth	3	41	44
Co. F, Littleton	2	36	38
Co. G, Lebanon	3	38	41
Co. H, Franklin Falls	3	33	36
Co. K, Wolfeborough	2	37	39
Strength of Third Regiment	29	323	352

CAVALRY.

	Commissioned Officers.	Enlisted Men.	Aggregate.
Co. A, Peterborough	3	47	50
Strength of Cavalry	3	47	50

ARTILLERY.

First Battery, Manchester	4	68	72
Strength of Artillery	4	68	72

RECAPITULATION.

Commander-in-Chief and Staff	11	....	11
Brigade Commander and Staff	10	5	15
Infantry	91	1,025	1,116
Cavalry	3	47	50
Artillery	4	68	72
Total	119	1,145	1,264

REGISTER

OF THE

NEW HAMPSHIRE NATIONAL GUARD.

HIS EXCELLENCY MOODY CURRIER, *Governor and Commander-in-Chief.*

INAUGURATED JUNE 4, 1885.

GENERAL STAFF.

NAME.	Rank.	Residence.	Date of Commission.
Augustus D. Ayling, Adjt. Gen.	Maj. Gen.....	Concord	July 15, 1879
Elbert Wheeler, Insp. Gen.*	Brig. Gen....	Nashua.........	June 17, 1885
Charles Williams, Q. M. Gen....	Brig. Gen....	Manchester....	June 17, 1885
George W. Pierce, Surg. Gen.	Brig. Gen....	Winchester....	June 17, 1885
Henry M. Baker, J. A. Gen......	Brig. Gen....	Bow............	Dec. 21, 1886
Frank P. Brown, Com. Gen.....	Brig. Gen....	Whitefield.....	June 17, 1885
Frank E. Kaley, Aid-de-Camp...	Colonel.......	Milford.........	June 17, 1885
Hiram H. Dow, Aid-de-Camp...	Colonel	Conway........	June 17, 1885
George G. Davis, Aid-de-Camp..	Colonel.......	Marlborough ..	June 17, 1885
Alfred A. Collins, Aid-de-Camp.	Colonel.......	Danville	June 17, 1885

*Re-appointment.

FIRST BRIGADE.

NAME.	Rank.	Residence.	Date of Commission.
Daniel M. White	Brig. Gen.	Peterborough.	May 15, 1884
George W. Gould, Asst. Adjutant General	Lieut. Col.	Winchester	May 28, 1884
Frank W. Russell, Asst. Inspector-General	Major	Plymouth	Dec. 11, 1885
William H. Cheever, Inspector Rifle Practice	Major	Nashua	Dec. 11, 1885
George Cook, Medical Director.	Lieut. Col.	Concord	May 28, 1884
Daniel B. Donovan, Judge Advocate	Major	Concord	May 22, 1885
Louis C. Merrill, Quarterm'r.	Captain	Manchester	July 22, 1884
John Gannon, Jr., Commissary.	Captain	Manchester	May 16, 1887
Daniel H. Gienty, Aid-de-Camp.	Captain	Concord	April 15, 1886
Albert N. Dow, Aid-de-Camp	Captain	Exeter	April 4, 1887

FIRST REGIMENT.

FIELD AND STAFF.

George M. L. Lane	Colonel	Manchester	Dec. 21, 1886
Richard M. Scammon	Lieut. Col.	Exeter	Dec. 21, 1886
Patrick A. Devine	Major	Manchester	Mar. 11, 1886
—— ——, Adjutant	First Lieut.	....	....
William G. Mason, Quarterm'r.	First Lieut.	Manchester	May 11, 1885
Hervey M. Bennett, Paymaster.	Captain	Manchester	Aug. 12, 1884
William M. Parsons, Surgeon.	Major	Manchester	Mar. 17, 1884
James Sullivan, Asst. Surgeon.	Captain	Manchester	Mar. 17, 1884
Luther F. McKinney, Chaplain.	Captain	Manchester	Jan. 10, 1887

COMPANY A.

George H. Demeritt	Captain	Dover	Sept. 1, 1881
Charles S. Clifford	First Lieut.	Dover.	May 16, 1887
Frank E. Rollins	Second Lieut.	Dover	May 16, 1887

COMPANY B.

NAME.	Rank.	Residence.	Date of Commission.
Daniel F. Shea	Captain	Manchester	Mar. 11, 1886
Edward P. Bagley	First Lieut	Manchester	Mar. 11, 1886
John F. Gleason	Second Lieut.	Manchester	Mar. 11, 1886

COMPANY C.

Leslie S. Bidwell	Captain	Goffstown	Mar. 16, 1885
George E. Whitney	First Lieut	Goffstown	Dec. 21, 1886
Frank A. Whipple	Second Lieut.	Goffstown	Dec. 21, 1886

COMPANY D.

John H. Ingraham	Captain	Dover	May 12, 1887
Edward D. Smith	First Lieut	Dover	May 12, 1887
Bion I. Brown	Second Lieut.	Dover	May 12, 1887

COMPANY E.

Bartlett N. Wilson	Captain	Manchester	April 13, 1887
Frank W. Tebbetts	First Lieut	Manchester	April 13, 1887
Walter G. Taylor	Second Lieut.	Manchester	May 5, 1887

COMPANY F.

Rosecrans W. Pillsbury	Captain	Derry Depot	Nov. 8, 1884
John E. Webster	First Lieut	Derry Depot	Nov. 8, 1884
Minor G. Frye	Second Lieut.	Derry Depot	Mar. 26, 1887

COMPANY H.

Désiré Laneville	Captain	Manchester	April 30, 1887
Louis Stevens	First Lieut	Manchester	April 30, 1887
John H. Groux	Second Lieut.	Manchester	April 30, 1887

COMPANY K.

NAME.	Rank.	Residence.	Date of Commission.
Patrick H. O'Malley	Captain	Manchester	Dec. 30, 1886
Alfred F. Eaton	First Lieut	Manchester	Nov. 15, 1886
....	Second Lieut	....	....

SECOND REGIMENT.

FIELD AND STAFF.

NAME.	Rank.	Residence.	Date of Commission.
Elbridge J. Copp	Colonel	Nashua	June 25, 1884
Albert W. Metcalf	Lieut. Col	Keene	May 15, 1885
Jason E. Tolles	Major	Nashua	May 15, 1885
Charles E. Faxon, Adjt	First Lieut	Nashua	April 14, 1887
Geo. P. Kimball, Quarterm'r	First Lieut	Nashua	Aug. 1, 1884
Ashton W. Rounsevel, Paym'r	Captain	Newport	Aug. 1, 1884
George W. Flagg, Surgeon	Major	Keene	May 10, 1886
William H. Nute, Asst. Surg	Captain	Farmington	May 10, 1886
George W. Grover, Chaplain	Captain	Nashua	July 1, 1884

COMPANY C.

Eugene H. Saunders	Captain	Nashua	May 25, 1887
Hiram S. Stevens	First Lieut	Nashua	May 23, 1887
Ernest C. Emerson	Second Lieut	Nashua	April 30, 1887

COMPANY D.

Fred W. Cheney	Captain	Newport	Aug. 6, 1884
Ira Stowell	First Lieut	Newport	Aug. 6, 1884
Bela Nettleton	Second Lieut	Newport	Mar. 26, 1885

COMPANY E.

NAME.	Rank.	Residence.	Date of Commission.
Isaac D. Piercy	Captain	Rochester	July 25, 1884
Fred L. Chesley	First Lieut	Rochester	July 15, 1884
Horatio L. Cate	Second Lieut.	Rochester	July 15, 1884

COMPANY F.

Charles H. Pitman	Captain	Farmington	Feb. 25, 1887
Charles W. Leighton	First Lieut	Farmington	Feb. 25, 1887
George W. Nutter	Second Lieut.	Farmington	Feb. 25, 1887

COMPANY G.

Francis O. Nims	Captain	Keene	July 24, 1884
Edward P. Kimball	First Lieut	Keene	July 24, 1884
Charles W. Starkey	Second Lieut.	Keene	July 24, 1884

COMPANY H.

Jerry P. Wellman	Captain	Keene	Aug. 1, 1885
Frank Chapman	First Lieut	Keene	Aug. 1, 1885
Elbridge A. Shaw	Second Lieut.	Keene	Aug. 1, 1885

COMPANY I.

Edwin H. Parmenter	Captain	Nashua	Sept. 1, 1884
Willis H. Goodspeed	First Lieut	Nashua	May 23, 1887
William R. Seaman	Second Lieut.	Nashua	May 23, 1887

COMPANY K.

Henry P. Whitaker	Captain	Hillsboro' Br.	Feb. 24, 1886
Loren E. Nichols	First Lieut	Hillsboro' Br.	Sept. 3, 1886
George F. Russell	Second Lieut.	Hillsboro' Br.	Sept. 3, 1886

THIRD REGIMENT.

FIELD AND STAFF.

NAME.	Rank.	Residence.	Date of Commission.
Joab N. Patterson	Colonel	Concord	April 18, 1878
True Sanborn, Jr	Lieut. Col	Chichester	May 29, 1878
Nathan H. Randlett	Major	Lebanon	Sept. 25, 1882
Fred S. Hall, Adjutant	First Lieut	Concord	April 19, 1886
Harry B. Cilley, Quarterm'r	First Lieut	Concord	May 19, 1884
George R. Leavitt, Paymaster	Captain	Laconia	Sept. 13, 1883
Irving A. Watson, Surgeon	Major	Concord	Dec. 12, 1884
Frank T. Moffett, Asst. Surg	Captain	Littleton	July 1, 1884
Daniel C. Roberts, Chaplain	Captain	Concord	Aug. 3, 1882

COMPANY A.

William A. Messer	Captain	New London	Jan. 6, 1876
Willard Reed	First Lieut	New London	April 3, 1879
Baxter Gay	Second Lieut	New London	Dec. 28, 1882

COMPANY C.

Edward H. Dixon	Captain	Concord	Feb. 25, 1881
	First Lieut		
	Second Lieut.		

COMPANY D.

William A. Yeaton	Captain	Pittsfield	July 14, 1885
Walter Langmaid	First Lieut	Chichester	Oct. 5, 1885
Forest F. Hill	Second Lieut	Pittsfield	Oct. 5, 1885

COMPANY E.

George H. Colby	Captain	Plymouth	April 22, 1885
Erastus B. Dearborn	First Lieut	Plymouth	May 6, 1886
Henry S. Arris	Second Lieut	Plymouth	May 6, 1886

COMPANY F.

NAME.	Rank.	Residence.	Date of Commission.
John T. Simpson	Captain	Littleton	June 27, 1884
Henry E. Bartlett	First Lieut	Littleton	May 12, 1887
Elliot F. Sawyer	Second Lieut.	Littleton	May 12, 1887

COMPANY G.

Charles H. Clough	Captain	Lebanon	July 23, 1883
Eugene S. Downes	First Lieut	Lebanon	July 23, 1883
George A. Freeto	Second Lieut.	Lebanon	Feb. 3, 1886

COMPANY H.

George N. Cheever	Captain	Franklin Falls	July 1, 1879
Amos S. Ripley	First Lieut	Franklin Falls	May 1, 1886
Hollis K. Smith	Second Lieut.	Franklin Falls	May 1, 1886

COMPANY K.

Joseph Lewando	Captain	Wolfeborough	Oct. 17, 1885
Charles L. Horne	First Lieut	Wolfeborough	Feb. 3, 1886
George E. Libbey	Second Lieut.	Wolfeborough	June 26, 1886

CAVALRY.

COMPANY A.

NAME.	Rank.	Residence.	Date of Commission.
Ervin H. Smith	Captain	Peterborough	May 3, 1883
Charles B. Davis	First Lieut	Peterborough	Jan. 25, 1886
Charles H. Dutton	Second Lieut.	Peterborough	April 28, 1886

ARTILLERY.

FIRST BATTERY.

NAME.	Rank.	Residence.	Date of Commission.
Samuel S. Piper	Captain	Manchester	May 1, 1876
Edward H. Currier	First Lieut	Manchester	April 6, 1882
Silas R. Wallace	First Lieut	Manchester	Mar. 27, 1886
John A. Barker	Second Lieut	Manchester	Mar. 27, 1886

RESIGNATIONS AND DISCHARGES

OF

COMMISSIONED OFFICERS.

GOVERNOR'S STAFF.

NAME.	Rank and Organization.	Date of Commission	Date of Discharge.	Remarks.
Philip Carpenter.........	Brig. Gen. and J. A. Gen.....	June 17, 1885	Dec. 21, 1886	Resigned.

BRIGADE STAFF.

NAME.	Rank and Organization.	Date of Commission	Date of Discharge.	Remarks.
Willis D. Thompson.. ...	Capt. and Com.	May 28, 1884	April 1, 1887	Resigned.
Richard M. Scammon....	Captain and A. D. C..........	May 28, 1884	Dec. 21, 1886	Dis. for Pr. to Lt. Col. 1st Regt.

FIRST REGIMENT.

NAME.	Rank and Organization.	Date of Commission	Date of Discharge.	Remarks.
John B. Hall	Colonel	Aug. 4, 1881	Nov. 22, 1886	Resigned.
Martin J. Galligan..	1st Lieut. Co. A	Oct. 10, 1881	Feb. 26, 1887	Resigned.
John H. Ingraham........	1st Lieut. Co. A	Mar. 7, 1887	May 12, 1887	Resigned.
Samuel H. Balch..........	1st Lieut. Co. C	Mar. 16, 1885	Nov. 4, 1886	Resigned.
Arthur F. Cooper.........	Captain Co. D..	Mar. 10, 1883	Jan. 29, 1887	Co. disb'd.
George E. Warren........	1st Lieut. Co. D	Mar. 10, 1883	May 10, 1887	Co. disb'd.
Albert N. Dow............	2d Lieut. Co. D.	Aug. 1, 1884	Mar. 21, 1887	Co. disb'd.
Fred W. McAllister.......	Captain Co. E..	Dec. 3, 1884	April 4, 1887	Resigned.
Orloff I. Ellsworth........	1st Lieut. Co. E	April 21, 1886	Feb. 8, 1887	Resigned.
John E. Fitzgerald........	2d Lieut. Co. F.	Nov. 8, 1884	Mar. 21, 1887	Resigned.

FIRST REGIMENT. — *Continued.*

NAME.	Rank and Organization.	Date of Commission	Date of Discharge.	Remarks.
James Mack	Captain Co. H.	Mar. 18, 1886	April 18, 1887	Co. disb'd.
William J. Andrews	1st Lieut. Co. H	May 26, 1884	Sept. 1, 1886	Resigned.
Charles W. Willey	2d Lieut. Co. H	Aug. 6, 1884	Mar. 11, 1887	Co. disb'd.
John H. Wales, Jr.	Captain Co. K.	April 4, 1882	Dec. 27, 1886	Resigned.
Patrick H. O'Malley	1st Lieut. Co. K	April 26, 1885	Oct. 28, 1886	Resigned.

SECOND REGIMENT.

William E. Spaulding	1st Lieut. and Adjt	May 15, 1885	April 14, 1887	Resigned.
Amos Lawrence	Captain Co. C.	July 13, 1883	April 18, 1887	Co. disb'd.
Charles D. Seaver	1st Lieut. Co. C	Mar. 12, 1885	Mar. 11, 1887	Co. disb'd.
Henry C. Tenney	2d Lieut. Co. C.	Mar. 12, 1885	Mar. 11, 1887	Co. disb'd.
James A. Cobb	Captain Co. C.	April 30, 1887	May 25, 1887	Resigned.
Charles T. Lund	1st Lieut. Co. C	April 30, 1887	May 23, 1887	Resigned.
Eugene W. Emerson	Captain Co. F.	Jan. 26, 1886	Feb. 25, 1887	Resigned.
Eugene H. Saunders	1st Lieut. Co. I.	Jan. 6, 1885	Feb. 16, 1887	Resigned.
Leander Emery	1st Lieut. Co. K	Jan. 7, 1886	July 24, 1886	Resigned.

THIRD REGIMENT.

Charles P. Hadley	1st Lieut. Co. C	Feb. 21, 1884	Mar. 19, 1887	Resigned.
John E. Gove	2d Lieut. Co. C.	Dec. 1, 1885	Mar. 19, 1887	Resigned.
Frank C. Williams	1st Lieut. Co. F	Nov. 23, 1885	Sept. 29, 1886	Resigned.
George E. Libbey	2d Lieut. Co. K	June 26, 1886	Feb. 16, 1887	Resigned.

COMMISSIONS ISSUED.

GOVERNOR'S STAFF.

NAME.	Rank and Organization.	Date of Commission
Henry M. Baker	Brig. Gen. and J. A. Gen.	Dec. 21, 1886

BRIGADE STAFF.

NAME.	Rank and Organization.	Date of Commission
John Gannon, Jr	Capt. and Brig. Commiss'y	May 16, 1887
Albert N. Dow	Captain and A. D. C.	Apr. 4, 1887

FIRST REGIMENT.

NAME.	Rank and Organization.	Date of Commission
George M. L. Lane	Colonel	Dec. 21, 1886
Richard M. Scammon	Lieut. Colonel	Dec. 21, 1886
Luther F. McKinney	Chaplain	Jan. 10, 1887
John H. Ingraham	First Lieut. Co. A	Mar. 7, 1887
Charles S. Clifford	Second Lieut. Co. A	Mar. 7, 1887
Charles S. Clifford	First Lieut. Co. A	May 16, 1887
Frank E. Rollins	Second Lieut. Co. A	May 16, 1887
George E. Whitney	First Lieut. Co. C	Dec. 21, 1886
Frank A. Whipple	Second Lieut. Co. C	Dec. 21, 1886
John H. Ingraham	Captain Co. D	May 12, 1887
Edward D. Smith	First Lieut. Co. D	May 12, 1887
Bion I. Browne	Second Lieut. Co. D	May 12, 1887
Bartlett N. Wilson	Captain Co. E	Apr. 13, 1887
Frank W. Tebbetts	First Lieut. Co. E	Apr. 13, 1887
Walter G. Taylor	Second Lieut. Co. E	May 5, 1887

FIRST REGIMENT. — *Continued.*

NAME.	Rank and Organization.	Date of Commission
Minor G. Frye	Second Lieut. Co. F	Mar. 26, 1887
Désiré Laneville	Captain Co. H	Apr. 30, 1887
Louis Stevens	First Lieut. Co. H	Apr. 30, 1887
John H. Groux	Second Lieut. Co. H	Apr. 30, 1887
Patrick H. O'Malley	Captain Co. K	Dec. 30, 1886
Alfred F. Eaton	First Lieut. Co. K	Nov. 15, 1886

SECOND REGIMENT.

Charles E. Faxon	First Lieut. and Adjt	Apr. 14, 1887
James A. Cobb	Captain Co. C	Apr. 30, 1887
Charles T. Lund	First Lieut. Co. C	Apr. 30, 1887
Ernest C. Emerson	Second Lieut. Co. C	Apr. 30, 1887
Hiram S. Stevens	First Lieut. Co. C	May 23, 1887
Eugene H. Saunders	Captain Co. C	May 25, 1887
Charles H. Pitman	Captain Co. F	Feb. 25, 1887
Charles W. Leighton	First Lieut. Co. F	Feb. 25, 1887
George W. Nutter	Second Lieut. Co. F	Feb. 25, 1887
Willis H. Goodspeed	First Lieut. Co. I	May 23, 1887
William R. Seaman	Second Lieut. Co. I	May 23, 1887
Loren E. Nichols	First Lieut. Co. K	Sept. 3, 1886
George F. Russell	Second Lieut. Co. K	Sept. 3, 1886

THIRD REGIMENT.

Henry E. Bartlett	First Lieut. Co. F	May 12, 1887
Elliot F. Sawyer	Second Lieut. Co. F	May 12, 1887
George E. Libbey	Second Lieut. Co. K	June 26, 1886

ENLISTED MEN DROPPED FROM THE ROLLS AS DESERTERS.

FIRST REGIMENT.

Private	Nelson U. Drew	Co. A
"	James Minton	Co. B
"	Cornelius Brasman	Co. B
"	Harry E. Burroughs	Co. E
"	Charles Laxon	Co. E
"	E. A. Whitney	Co. E
Private	John E. Wyman	Co. E
"	Lyman H. Burbank	Co. E
"	Harry Corsin	Co. F
"	Sumner A. Wheeler	Co. F
"	John E. Sullivan	Co. F
"	Albert L. Wiggin	Co. K

SECOND REGIMENT.

Private	Arthur P. Bancroft	Co. D
"	Fred H. Jennings	Co. D
"	Fred B. Cummings	Co. D
"	James E. Stevens	Co. F
Private	Fabius B. Pettigrew	Co. F
"	Edward M. Tenney	Co. K
"	Wm. H. Blakely	Co. K

THIRD REGIMENT.

Private	Epes J. Colley	Co. E
"	Edric O. Smith	Co. E
"	Patrick H. Good	Co. F
Private	Henry W. Sanborn	Co. H
"	Jabez R. Smith	Co. H
"	Henry F. Keniston	Co. H

REPORTS

OF THE

WARDEN AND INSPECTORS

OF THE

NEW HAMPSHIRE STATE PRISON

TOGETHER WITH THE

REPORTS OF THE CHAPLAIN AND PHYSICIAN,

JUNE, 1887.

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

OFFICERS.

WARDEN.

FRANK S. DODGE.

DEPUTY WARDEN.

THOMAS A. PILSBURY.

PHYSICIANS.

H. M. FRENCH, M. D.   C. R. WALKER, M. D.

CHAPLAIN.

REV. E. R. WILKINS.

OVERSEER OF COOK-ROOM.

F. L. ROBINSON.

HALL OFFICER.

DAVID L. HOBBS.

OVERSEERS OF SHOPS.

F. J. SANBORN.
DAVID SANBORN.
J. B. GREATON.
S. N. ALLEN.
JOSEPH MARTIN.

GUARDS.

W. H. ABBOTT.
ARTHUR DAY.
C. H. HOLMES.
E. P. HODGDON.
G. W. COLBY.
H. H. SMART.

NIGHT WATCHMEN.

J. W. H. LAW.
N. W. McMURPHY.

MATRON.

MRS. A. A. CAVERLEY.

WARDEN'S REPORT.

To His Excellency the Governor and the Honorable Council:

Gentlemen,—I respectfully submit the following report of the management of the state prison for the year ending April 30, 1887.

The number of convicts in prison is 121,—males, 118; females, 3; a decrease in number since the last report of 11. This small reduction in numbers has reduced the income of the prison about $800; and although a small amount, it is a serious loss to us, as the regular running expenses for officers, etc., remain the same, whether we have 100 or 150 inmates. The earnings for the year have been $16,508.17; the expenses have been $20,024.85, leaving a balance against the prison of $3,516.68.

Our convicts are still employed under the contract system. As the matter of prison labor is being very generally discussed, and the contract system quite generally condemned (through a spirit of policy, in many cases, I think), I wish to say most decidedly that from my experience and observation, no other system offers so satisfactory a method of employing the convicts in our prison; and I would earnestly recommend a renewal of the same now in force, with such alterations as in your judgment should seem best and proper.

The very best of order has prevailed, and punishments during the year have been very few, the majority of our men accepting the situation they find themselves in, and cheerfully complying with the rules as well as men in confinement could be expected to. As much interest is taken in, and much being written in regard to, the reformation of criminals, and some of our prison managers claim very liberal percentages of reformation on account of non-recommitment, I desire to place our own report of recommitments on record, but at the same time disclaim any pretence to the assumable idea that all the men discharged, who are not returned to us, are reformed.

The recommitments for the past seventeen years have averaged six per cent, and for the year 1886 were only four per cent. Perhaps our discharged men find more satisfactory fields of labor than are offered in New Hampshire, and perhaps the quality of reformation is not suited to their tastes; but be this as it may, we feel to congratulate the people of our own commonwealth that crime is not dealt with in a manner to make a return to it desirable, and that we are able to show such a small per cent of returns to our prison. Our high standard of discipline has been maintained; I can see no good reason for relaxing it.

The men have enjoyed unusually good health; but one death has occurred during the year. The sanitary condition of the prison and the physical wants of the prisoners have been faithfully attended to by our physician, Dr. H. M. French.

The moral and spiritual duties belonging to the chaplain have been pleasantly performed by our chaplain, Rev. E. R. Wilkins. Catholic prisoners have also had the attendance and spiritual attention of Rev. J. E. Barry, and his influence has been such as to call for my hearty thanks.

Frequent fires have occurred on the roof of our cell-house and guard-room, originating from sparks from the shop chimney. It is a constant source of anxiety, and I respectfully call your attention to the necessity of in some way preventing this constant danger of fire.

There are several desirable improvements and many needed repairs about the prison, of which your honorable committee are thoroughly informed. I respectfully call your attention to their report for details of the same, and trust the suggestions contained therein may meet with prompt approval by the Legislature.

The actual expenses of the prison for the past year were: For food consumed, $6,620.41; deducting amount received for board of officers, $3,315.30, leaves $3,305.11 as the net cost of food; clothing and bedding, $1,598.61; salaries, $11,615.49; repairs and all other expenses or improvements, $3,988.64; total, $20,024.85. The earnings from labor of prisoners under contract were $15,559. The daily average number of inmates was 117⅙. The cost of each inmate was 46⅘ cents per day. The daily average cost per inmate, after deducting earnings, was 8⅕ cents per day.

I sincerely tender your excellency and the honorable councilors my humble thanks for your many favors. The officers are tendered my thanks for their faithfulness.

Statistical tables are annexed.

Respectfully submitted.

F. S. DODGE,
Warden.

CONCORD, N. H., May 1, 1887.

STATISTICS.

Whole number of convicts in prison May 1, 1886	132	
Received from courts from May 1, 1886, to April 30, 1887	50	
Whole number in prison during the year		182
Whole number discharged during the year, viz.:		
Pardoned	5	
Discharged	55	
Died	1	
		61
Whole number in prison April 30, 1887, viz.:		
White males	118	
Females	3	
		121

AGE WHEN COMMITTED.

Under 20 years	6	
Between 20 and 30 years	57	
Between 30 and 40 years	32	
Between 40 and 50 years	20	
Over 50 years	6	
		121

SOCIAL RELATIONS.

Married	44	
Single	77	
		121

HABITS OF LIFE.

Claim to be temperate	32	
Admit themselves to be intemperate	89	
		121

RELIGION.

Protestants	71	
Catholics	50	
		121

EDUCATION.

Read and write	109	
Read only	4	
Cannot read	8	
		121

COUNTIES CONVICTED IN.

Rockingham	27	
Strafford	18	
Belknap	4	
Carroll	8	
Merrimack	12	
Hillsborough	28	
Cheshire	3	
Sullivan	8	
Grafton	7	
Coös	4	
United States Court	2	
		121

CRIMES COMMITTED.

Murder, second degree	4
Manslaughter	8
Attempt to kill	8
Rape	4
Attempt to rape	3
Incorrigible at Industrial School	1
Bigamy	1

Arson	2	
Burglary	25	
Stealing horse	11	
Forgery	1	
Breaking and entering	9	
Embezzlement	2	
Making counterfeit money	1	
Incest	1	
Perjury	1	
Stealing	17	
Obtaining goods by false pretences	2	
Poisoning cow	1	
Robbery	8	
Robbing post-office	1	
Tramp	9	
False entry in bank ledger	1	
		121

NATIVES OF THE FOLLOWING COUNTRIES.

United States	93	
Ireland	11	
England	8	
Canada	3	
Nova Scotia	2	
Sweden	1	
Germany	1	
Scotland	1	
Italy	1	
		121

LENGTH OF SENTENCE.

30 years	4
25 years	1
20 years	5
15 years	1
13 years	1
12 years	1

10 years	4	
8 years	1	
7 years	6	
6 years	1	
5 years	15	
4 years	9	
3 years	30	
2 years	20	
1½ years	3	
1¼ years	6	
1 year, one month	1	
1 year, one day	11	
1 year	1	
		121

TABLE

Showing the number of convicts in the prison, committed, discharged, pardoned, deceased, and escaped, in each year since the establishment of the institution, 1812.

Year.	In prison.	Committ'd	Discharg'd	Pardoned.	Removed to Asylum for Insane	Died.	Es-caped.
1812	1	1					
1813	12	11					
1814	22	14	4				
1815	23	14	5	2			
1816	48	31	5	1			5
1817	59	29	13	3		1	1
1818	69	26	16				
1819	72	16	20	1		1	2
1820	61	18	15	2		2	
1821	65	23	15	2		2	
1822	58	16	19	2		3	
1823	66	26	11	5		1	
1824	62	19	17	5		1	
1825	66	24	13	3		1	2
1826	57	13	15	4		1	
1827	48	12	14	7		2	
1828	86	20	8	4			
1829	50	11	9	7		1	
1830	63	31	9	4			
1831	81	24	8	3			
1832	82	19	10	6		1	
1833	81	16	8	9			1
1834	79	13	4	11			
1835	78	23	6	16			
1836	86	21	8	4		1	2
1837	72	12	15	10		1	
1838	70	5	4	3			
1839	73	30	10	15		2	
1840	78	24	4	14		1	
1841	48	28	13	7		2	
1842	92	20	9	3			
1843	99	28	17	4			
1844	88	25	19	15		1	
1845	81	14	8	12		2	
1846	74	30	12	22		1	
1847	61	14	12	13		1	
1848	77	42	11	14			1
1849	82	17	9	2		1	
1850	91	36	10	14	1	2	
1851	92	26	7	11		1	1
1852	111	44	11	11		6	
1853	109	24	9	15		2	
1854	105	28	13	13		6	
1855	97	26	10	17	1	6	
1856	94	32	19	8		3	
1857	86	23	27	9		4	
1858	110	49	14	9			
1859	105	37	22	16	1	3	
1860	110	35	18	10	1	1	
1861	119	42	19	10		4	
1862	112	31	20	12	1	5	
1863	101	22	13	14		5	1
1864	92	22	14	17			
1865	70	9	17	8	1	5	
1866	111	60	7	15		2	1
1867	118	45	17	16		3	
1868	135	46	13	13		3	
1869	129	39	24	19		2	
1870	118	32	20	18	1	3	1
1871	91	29	38	14	2	2	

TABLE. — *Continued.*

Year.	In prison.	Committ'd	Discharg'd	Pardoned.	Removed to Asylum for Insane	Died.	Es-caped.
1872	80	25	24	8		4	
1873	88	33	19	4		2	
1874	95	41	19	5		10	
1875	127	56	15	5		4	
1876	191	64	32	9		3	
1877	212	65	25	15	1	11	
1878	236	76	21	9		12	
1879	252	58	72	24	1	12	
1880	228	48	52	21		4	
1881	202	51	39	14	2	7	
1882	180	39	32	9		7	
1883	168	36	40	2	1	4	
1884	182	61	29	7		6	
1885	175	35	36	7		5	
1886	179	56	43	6		2	
1887	182	50	55	5		1	
		2,412	1,309	674	14	192	20

REGISTER OF CONVICTS IN PRISON MAY 1, 1887.

NAMES.	Age.	Where born.	What county convicted in.	Crime.	When committed.	Sentence.		
						Years.	Months.	Days.
Peter Johnson	28	Sweden	Carroll	Murder, second degree	April, 1874	20	....	....
Charles Stevens	34	Loudon, N. H.	Merrimack	Rape	April, 1875	30	....	....
Sylvester W. Cone	46	Columbia, N. H.	Carroll	Manslaughter, first degree	Nov., 1876	30	....	.. .
Edward McNab	28	Ireland	Hillsborough	Rape	Jan., 1879	25	....	....
Miles S. Wilson	29	New York	Hillsborough	Burglary	Oct., 1879	10	....	....
William H. Caney	65	Portsmouth, N. H.	Strafford	Murder, second degree	Sept., 1880	30	....	....
Joseph H. Otis	26	Strafford, N. H	Strafford	Murder, second degree	Sept., 1880	30	....	....
John H. Elkins	22	Kingston, N. H	Rockingham	Murder, second degree	Nov., 1880	20	....	....
David L. Ramsbottom	38	England	Rockingham	Assault with intent to kill	Oct., 1882	10	....	....
Ellery Albee	51	Langdon, N. H	Hillsborough	Making false entries in ledger of the Ashuelot Savings Bank	Nov., 1882	10	....	....
Edward Chyott	36	Burlington, Vt.	Sullivan	Burglary.	Feb., 1883	13	....	....
William Morris	39	Burlington, Vt.	Sullivan	Burglary	Feb., 1883	5	....	....
George F. Hartford	23	Raymond, N. H.	Rockingham	Rape	April, 1883	20	....	....
Michael Winn	45	Ireland	Hillsborough	Manslaughter	May, 1883	20	....	....
Henry H. Hall	32	Claremont, N. H	Sullivan	Burglary	Jan., 1884	4	....	....
Warren Bemis	32	Barton, Vt.	Sullivan	Arson	Feb., 1884	15	....	....
William Wiggin	21	Danvers, Mass	Strafford	Stealing horse	Feb., 1884	5	....	....
James Crandell	40	Troy, N. Y.	Cheshire	Burglary	April, 1884	8	....	....
Frank Price	21	New Brunswick	Rockingham	Robbery	April, 1884	7	....	....
William Broderick	38	Ireland	Rockingham	Robbery	April, 1884	7	....	....
Charles Morton	22	New Brunswick	Rockingham	Robbery	April, 1884	7	....	....
Thomas McCauly	31	Portsmouth, N. H.	Sullivan	Burglary	Sept., 1884	3	....	....
Stephen Hennessy	25	Boston, Mass	Hillsborough	Breaking and entering	Sept., 1884	3	....	....
Edward Bonner	21	Grafton, Mass	Rockingham	Stealing	Oct., 1884	3	....	....
Elisha Hoyt	79	Derry, N. H.	Rockingham	Obtaining goods under false pretençes	Oct., 1884	4	....	....
George H. Harris	23	Hartford, Conn.	Grafton	Stealing horse	Nov., 1884	5	....	....
Nelson G. Hoyt	30	Newton, N. H.	Rockingham	Stealing horse	Nov., 1884	3	....	..
Jacob P. Huse	60	Newburyport, Mass.	Rockingham	Poisoning cow	Nov., 1884	3	....	....
James McLear	27	Ireland	Merrimack	Attempt to kill	Dec., 1884	4	....	...

Charles Laundry	23	Warren, Vt.	Sullivan	Burglary	Feb., 1885	7	....	....
George Legro	26	Columbia, N. H.	Coös	Stealing	Feb., 1885	3	....	....
Maxime Gelinas	24	Canada	Hillsborough	Stealing	Mar., 1885	5	....	....
Clarence B. Sargent	27	Sutton, N. H.	Hillsborough	Burglary	Mar., 1885	4	....	....
Michael Brennon	35	Groton, Mass.	Hillsborough	Stealing horse	Mar., 1885	5	....	....
Charles Connell	26	Vermont	Cheshire	Attempt to rape	April, 1885	3	....	....
William F. Osgood	29	Providence, R. I	U. S. Court	Making counterfeit money	May, 1885	3	....	....
Frank W. Marsh	23	Lisbon, Me	Sullivan	Breaking and entering	Sept., 1885	3	....	....
John Comer	24	England	Hillsborough	Burglary	Sept., 1885	2	....	....
Alvin R. Corliss	48	Franklin, N. H.	Hillsborough	Attempt to rape	Sept., 1885	2	....	....
Charles O. Carlton	21	California	Hillsborough	Stealing horse	Sept., 1885	3	....	....
George Wilson	42	Ohio	Hillsborough	Robbery	Sept., 1885	2	....	....
George Clough	33	Deering, N. H.	Hillsborough	Attempt to kill	Sept., 1885	2	....	....
George Perkins	46	Maine	Strafford	Stealing	Sept., 1885	3	....	....
Edgar F. Hamilton	28	Milton Mills, N. H.	Strafford	Burglary	Sept., 1885	6	....	....
John Thompson	32	Maine	Strafford	Breaking and entering	Sept., 1885	2	....	....
Rose Hardy	35	Springfield, N. H.	Hillsborough	Stealing	Oct., 1885	3	....	....
James H. Messier	35	Springfield, N. H.	Hillsborough	Stealing	Oct., 1885	3	....	....
Charles Campbell	35	Rhode Island	Merrimack	Breaking and entering	Oct., 1885	2	...	....
William McCarthy	21	Salem, Mass.	Rockingham	Stealing	Oct., 1885	2	....	....
Thomas A. Spencer	40	Manchester, N. H.	Rockingham	Stealing horse	Oct., 1885	2	....	....
Carter L. Jenness	33	Eaton, N. H.	Carroll	Attempt to kill	Oct., 1885	2	....	....
John Dolan	30	New York	U. S. Court	Burglary, post-office	Dec., 1885	2	....	....
Irving Moran	18	Durham, N. H.	Strafford	Burglary	Feb., 1886	5	....	....
James McKee	18	Ireland	Strafford	Manslaughter, second degree	Feb., 1886	7	....	....
Edward Lear	39	Massachusetts	Hillsborough	Stealing	Mar., 1886	3	....	....
Nathan P. Cotton	36	Center Harbor, N. H.	Grafton	Incest	Mar., 1886	3	....	....
John S. J. Lee	26	Greenfield, N. H.	Hillsborough	Perjury	Mar., 1886	3	....	....
William Murray	21	Vermont	Belknap	Burglary	Mar., 1886	3	....	....
Fred E. White	22	Peterborough, N. H.	Merrimack	Burglary	April, 1886	3	....	....
Michael Martin	45	New York	Merrimack	Burglary	April, 1886	4	....	....
Charles Douglass	25	Colorado	Rockingham	Burglary	April, 1886	5	....	....
Peter Marcoux	20	Haverhill, Mass.	Rockingham	Stealing	April, 1886	5	....	....
John Henderson	40	Maine	Rockingham	Tramp	April, 1886	1	3	....
John Daily	48	Ireland	Rockingham	Tramp	April, 1886	1	3	....
John Garrison	24	Maine	Rockingham	Tramp	April, 1886	1	3	...
Thomas Manning	40	England	Rockingham	Breaking and entering	April, 1886	2	....	....
Thomas Martin	23	New York	Rockingham	Tramp	April, 1886	1	3	....
Michael J. Storin	23	Concord, N. H.	Merrimack	Attempt to kill	April, 1886	4	....	....
James A. Drew	37	Brookfield, N. H.	Carroll	Attempt to kill	April, 1886	5	....	....
James H. Bryant	44	Sandwich, N. H.	Carroll	Attempt to kill	April, 1886	2	..	....
William E. Somers	26	Franconia, N. H.	Coös	Attempt to kill	April, 1886	4	...	....
William Scales	18	Plymouth, N. H	Grafton	Burglary	May, 1886	1	....	1

REGISTER OF CONVICTS IN PRISON MAY 1, 1887. — *Continued.*

NAMES.	Age.	Where born.	What county convicted in.	Crime.	When committed.	Sentence.		
						Years.	Months.	Days.
Heman W. Haney	23	Plymouth, N. H.	Grafton	Burglary	May, 1886	2		
John Powers	20	Massachusetts	Hillsborough	Incorrigible at Industrial School	July, 1886	1		
Charles M. Armstrong	40	Scotland	Strafford	Burglary	Sept., 1886	2		
William Rafferty	59	Ireland	Strafford	Attempt to rape	Sept., 1886	5		
Albion French	29	Gardner, Me.	Strafford	Stealing	Sept., 1886	3		
John F. Millett	24	Rhode Island	Strafford	Embezzlement	Sept., 1886	2		
Jane Farnham	32	Alton, N. H.	Strafford	Manslaughter	Sept., 1886	1		1
Mina Farnham	19	Alton, N. H.	Strafford	Manslaughter	Sept., 1886	1		1
William Mott	27	Swanton, Vt.	Hillsborough	Stealing	Sept., 1886	3		
George B. Thatcher	17	Rhode Island	Hillsborough	Stealing horse	Sept., 1886	1	6	
Gotleib Goel	37	Germany	Hillsborough	Breaking and entering	Sept., 1886	5		
Joseph Dion	20	Canada	Hillsborough	Burglary	Sept., 1886	1		1
Philippe Lavesque	40	Canada	Hillsborough	Burglary	Sept., 1886	3		
Frank C. Worthley	26	Avon, Me	Hillsborough	Embezzlement	Sept., 1886	2		
Christopher Carter	53	England	Sullivan	Stealing horses	Oct., 1886	3		
Lewis Martin	24	Roxbury, Vt.	Sullivan	Burglary	Oct., 1886	2		
Lewis T. Dow	20	Boston, Mass	Belknap	Stealing horse	Oct., 1886	4		
James Harris	42	Boston, Mass	Belknap	Robbery	Oct., 1886	3		
John Kelley	20	Boston, Mass	Merrimack	Breaking and entering	Oct., 1886	2		
William Rice	40	England	Merrimack	Stealing	Oct., 1886	2		
Thomas Burke	32	Concord	Merrimack	Robbery	Oct., 1886	1		1
John White	27	Ireland	Merrimack	Burglary	Oct., 1886	5		
Thomas Monroe	49	New York	Merrimack	Robbery	Oct., 1886	1		1
James E. Lyons	27	Bangor, Me	Rockingham	Stealing	Oct., 1886	3		
James F. Clough	31	Maine	Carroll	Stealing horse	Oct., 1886	4		
George W. Hilliard	26	Gorham, N. H.	Coös	Stealing	Oct., 1886	3		
Joseph Morin	45	Canada	Coös	Arson	Oct., 1886	10		
George T. Lacey	27	Ireland	Grafton	Stealing	Nov., 1886	1		1
John M. Chase	30	Campton, N. H.	Grafton	False pretences	Nov., 1886	1		1
George H. Stevens	34	Nashua, N. H.	Grafton	Forgery	Nov., 1886	4		

Austin Whitten	22	Sanford, Me.	Strafford	Breaking and entering	Feb., 1887	3	....	....
Horace A. Joy	38	Berwick, Me.	Strafford	Breaking and entering	Feb., 1887	3	....	....
Stephen Deshon	20	Maine	Strafford	Stealing horse	Feb., 1887	2	....	....
John Jackson	44	Italy	Strafford	Tramp	Feb., 1887	1	....	1
Benjamin F. Abbott	31	Lowell, Mass.	Belknap	Bigamy	Mar., 1887	1	....	1
Thomas Degnan	25	England	Hillsborough	Rape	Mar., 1887	3	....	....
Victor Frenette	21	Nashua, N. H.	Hillsborough	Burglary	Mar., 1887	3	....	....
Robert Wade	21	Plymouth, Conn.	Hillsborough	Robbery	Mar., 1887	5	....	....
Charles A. Jennings	31	Walpole, N. H.	Cheshire	Manslaughter	April, 1887	12	....	....
John Valentine	36	New York	Hillsborough	Assault with attempt to kill	April, 1887	5	....	...
Patrick Blute	42	Ireland	Rockingham	Manslaughter	April, 1887	20	....	....
Thomas Williamson	22	England	Rockingham	Stealing	April, 1887	1	6	....
Daniel Crowley	70	Ireland	Rockingham	Manslaughter, second degree	April, 1887	1	6	....
Frank Hoyt	22	Philadelphia, Penn.	Rockingham	Tramp	April, 1887	1	....	1
John Sullivan	19	Boston, Mass.	Rockingham	Tramp	April, 1887	1	3	...
John Henwright	27	Chicago, Ill.	Rockingham	Tramp	April, 1887	1	....	1
George Hunt	32	England	Rockingham	Tramp	April, 1887	1	3	....
Joseph Berry	31	Vermont	Carroll	Burglary	April, 1887	5	....	....
Benjamin C. Godfrey	21	Eaton, N. H.	Carroll	Manslaughter, second degree	April, 1887	3	....	...

REPORT

OF THE

COMMITTEE ON THE STATE PRISON.

To His Excellency the Governor and the Honorable Council:

The Prison Committee herewith respectfully submits its report for the year ending May 1, 1887.

The conduct of the business affairs of the prison and the discipline there maintained have been satisfactory.

The treasurer's report, which is annexed, shows an excess of expenses over earnings of $3,516.68, which is mainly due to the decrease in the number of convicts during the last year, while the expenses have of necessity remained about the same.

Last March the attention of the committee was called to the fire risk attending the manufacture and painting of bedsteads in the shops of the prison. After examining the matter they recommended additional protection by the introduction of automatic fire-sprinklers; which was approved and ordered by the Governor and Council. The system is now in working order, ready for any emergency. It cost $1,200, which has not yet been paid.

It has now been eight years since the construction of the prison buildings. In the mean time no general repairs have been made; but some are now required, such as painting, whitening walls and ceilings, renewing plank walks, and relaying in cement the slates on the west side of the main building, to prevent the partially consumed shavings from the boiler-chimney being blown under the slating and setting fire to the roof.

The committee also very strongly recommend that the State should at once complete the purchase of the land in front of the prison, now owned by Benjamin Farnum, and thus secure control of it for the future requirements of the institution. The estimated cost of the repairs and the purchase of the land, with the $1,200 due for sprinklers, will not exceed $6,500; and the committee earnestly recommend that the next Legislature appropriate a sum sufficient for those purposes.

B. A. KIMBALL,
M. L. MORRISON,
J. W. JEWELL,
Committee on State Prison.

TREASURER'S REPORT.

To His Excellency the Governor and the Honorable Council:

Gentlemen, — I have the honor respectfully to submit the following report of the financial transactions on account of the New Hampshire State Prison for the fiscal year ending April 30, 1887:

RECEIPTS.

John Kimball, assignee	$16,226.75
Subsistence (board of officers)	3,315.30
Incidentals	265.07
Visitors' fees	250.65
Rent	303.60
Water for shops	378.67
Board United States prisoners	394.92
State treasurer, deficiency in current expenses	3,204.74
Total receipts	$24,339.70

DISBURSEMENTS.

Overseers, including expenses of prison committee of honorable Council, for the year 1885–86	$10,115.49
Incidentals	886.44
Subsistence	6,620.41
Carried forward	$17,622.34

Brought forward	$17,622.34
Deputy warden	1,000.00
Hospital supplies	235.20
Funeral expenses	10.50
Clothing	1,598.61
Discharged convicts	197.00
Physician	500.00
Repairs	352.93
Light, fuel, and water	2,143.88
Furniture	679.24
Total disbursements	$24,339.70

The following are the earnings and expenses of the institution for the year ending April 30, 1887 :

EARNINGS.

Labor of convicts from May 1, 1886, to May 1, 1887	$15,559.00
Visitors' fees	250.65
Rent	303.60
Board United States prisoners	394.92
Total earnings	$16,508.17

EXPENSES.

Deputy warden's salary	$1,000.00
Physician	500.00
Overseers (net)	9,632.49
Clothing	1,598.61
Discharged convicts	197.00
Furniture	679.24
Subsistence (net)	3,305.11
Light, fuel, and water (net)	1,765.21
Hospital supplies	235.20
Carried forward	$18,912.86

Brought forward	$18,912.86
Funeral expenses	10.50
Repairs	352.93
Incidentals (net)	596.37
Loss on inventory	152.19
Total expenses for the year	$20,024.85
Excess of expenses over earnings	3,516.68
	$16,508.17

FINANCIAL CONDITION.

ASSETS MAY 1, 1886.

Provisions, etc., on hand, as per inventory	$2,122.86
Due from contractor for convict labor and sundry items	1,385.75
Total assets May 1, 1886	$3,508.61

ASSETS MAY 1, 1887.

Provisions, etc., on hand, as per inventory	$1,970.67
Due from contractor for convict labor and sundry items	1,226.00
Total assets May 1, 1887	$3,196.67
Decrease in assets	311.94
Balance drawn from state treasury	3,204.74
Net loss	$3,516.68

The claim against the contractor reported above consists of the following items:

Convict labor for April, 1887 . . .	$1,201.00
Night watchman and extra overseer . .	25.00
	$1,226.00

SOLON A. CARTER,
Treasurer of State Prison.

CHAPLAIN'S REPORT.

To His Excellency the Governor and the Honorable Council:

GENTLEMEN, — I have the honor of submitting to you the following report:

There has been no change in my duties as chaplain; the preaching and praise service is held on Sabbath morning. These, by the interest and attention given, indicate they are enjoyed by the prisoners, and it is sincerely hoped that some have been helped by them to a better life.

Many of the original purchase of books in the library are worn past recovery, which will necessitate the purchase of new copies or a revision of our catalogue.

John Howard, who gave the best part of his life to the saving and helping criminals to a better life, says: "To reform prisoners, or to make them better as to their morals, should be the leading view in every place of their imprisonment. We owe this to them as rational and immortal beings; nor can any criminality of theirs justify our neglect in this particular." As to the possibility of their reformation, no one can deny that many of them have reformed, and have after their discharge from prison led honest lives. I am not prepared to say what per cent go from our prison reformed; indeed, I do not think any man is able to make such estimate of any prison unless he is willing to hazard his judgment of men or his veracity. That more are not rescued is largely due to the lack of intelligent and persistent effort in this direction, and to the want of faith in the possibilities of prisoners as well as in the power of God.

The arrest and imprisonment of a person under the charge of crime, whether justly or unjustly, mark a serious crisis in his life. It is an event which must exert some determinative influence for good or evil on his whole future career. It is a time for retrospection, for self-examination, when conscience is awakened to unusual alertness, when the better impulses of his nature plead for the supremacy. The solitude of prison life is especially adapted to awaken thoughts connected with the life which has resulted so disastrously, accompanied by purposes of amendment. It is at this point of his prison life that we commence to labor for his reformation; and if this period passes without some effort toward amendment his case is less hopeful.

If I understand aright the meaning of sentence to labor in prison, it has special bearing on the character of the criminal. It is the effect of crime to produce an abnormal character. The criminal in this respect is different from the majority of men, for we find his human and social instincts are blunted, his moral feelings become paralyzed by the frequent indulgence of his passions. Not having any honorable employment, there is no healthy contact with men, no steadfast purpose in life, his whole nature apparently being filled with false and vicious ideas of life and society.

The mass of those who form the criminal classes dislike work, and in most cases their crime is traceable to this fact. If he has become an adept in crime he regards all labor with disdain, and boasts that he is sharp enough to secure a living without toil. He feels himself, and he is, at enmity with society around him. He has no definite purpose in life, no inward check of self-restraint or inward impulses from human sympathy or respect, until his power of will has become impaired, and his sense of manhood blighted. Indeed, with many it is much worse than this; they have so given themselves up to oppose law and social order that a spirit of diabolism possesses them.

There is a mighty moral force in industrial labor, and it affords lessons of reformation which cannot be overlooked. From the regularity and necessary attention required in its performance the habit of labor is formed, and with it the fact of its inestimable worth as a means to certain ends, which have formerly been secured by preying upon society. While the convict may in some sense feel that the labor he performs is a part of his sentence, yet the influence will contribute to his health, happiness, and reform.

The educational privileges afforded the prisoners are enjoyed greatly, and have been wonderfully profitable. Some have learned to read and write; their joy over the acquisition, and gratitude to those who have helped them in their struggles, are unbounded. But the effect upon them as men we may never fully estimate. During their convict life it is a great blessing; their book is their constant companion during all the hours spent in their cell. It also furnishes a certain criteria by which we may form some opinion of the man, and the hopefulness of his reform from the books he constantly seeks. If I find a man deeply interested in books of a moral tone, seeking light, and studying works that instruct and lead to a different and better life, I have good ground to believe that his professions are truthful, and I may cherish hope that he is in the path of reformation.

But above and beyond all these I joyfully recognize and base all hope of complete reformation upon the divine energy and presence promised every seeking, contrite soul that turns to Him for regenerating and saving mercy.

I herewith sincerely accord thanks to the warden, deputy, and associated officials, for the courtesy and assistance rendered me during the year just closing.

E. R. WILKINS,
Chaplain.

PHYSICIAN'S REPORT.

To His Excellency the Governor and the Honorable Council:

Gentlemen,—I beg to present my fourth annual report of the sanitary condition of the state prison and the health of its inmates.

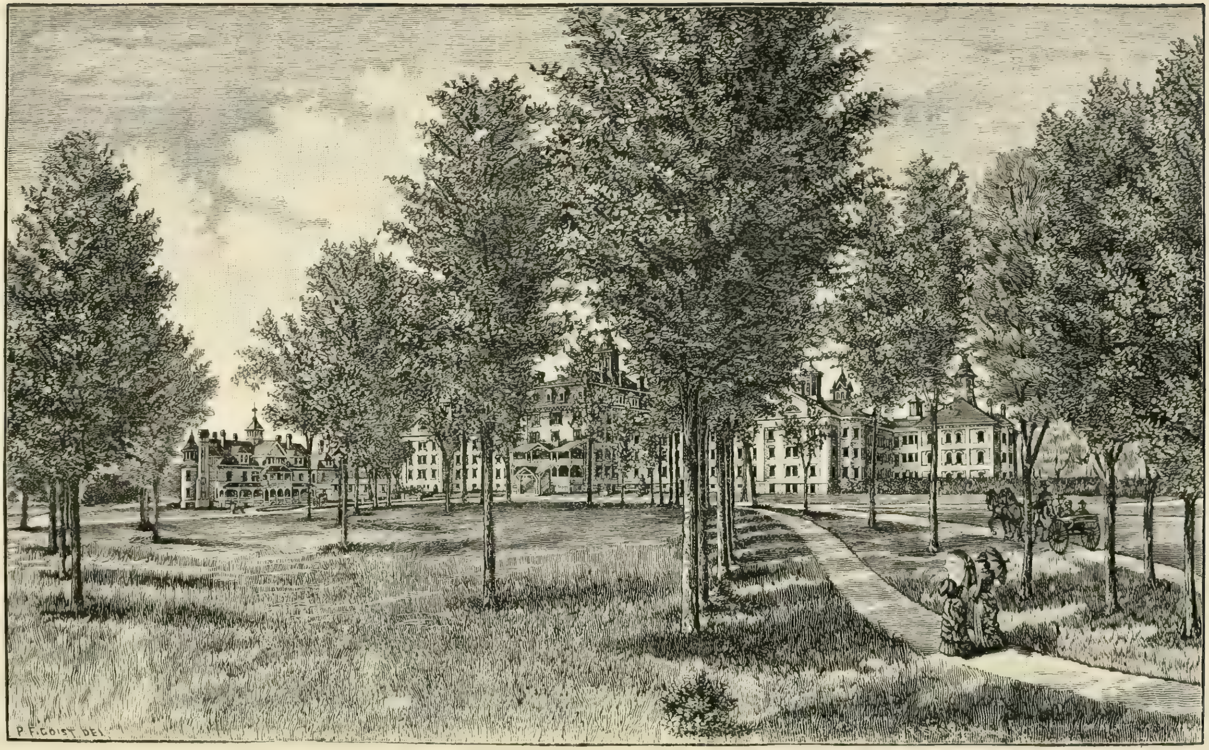
We have had but little sickness the past year, and only a small number of injuries. The general health of the prisoners is the best that it has been since my connection with the institution, and we have had the smallest number of deaths.

The diet and sanitary conditions have been maintained at the usual standard. I wish to thank the state officials for courtesies.

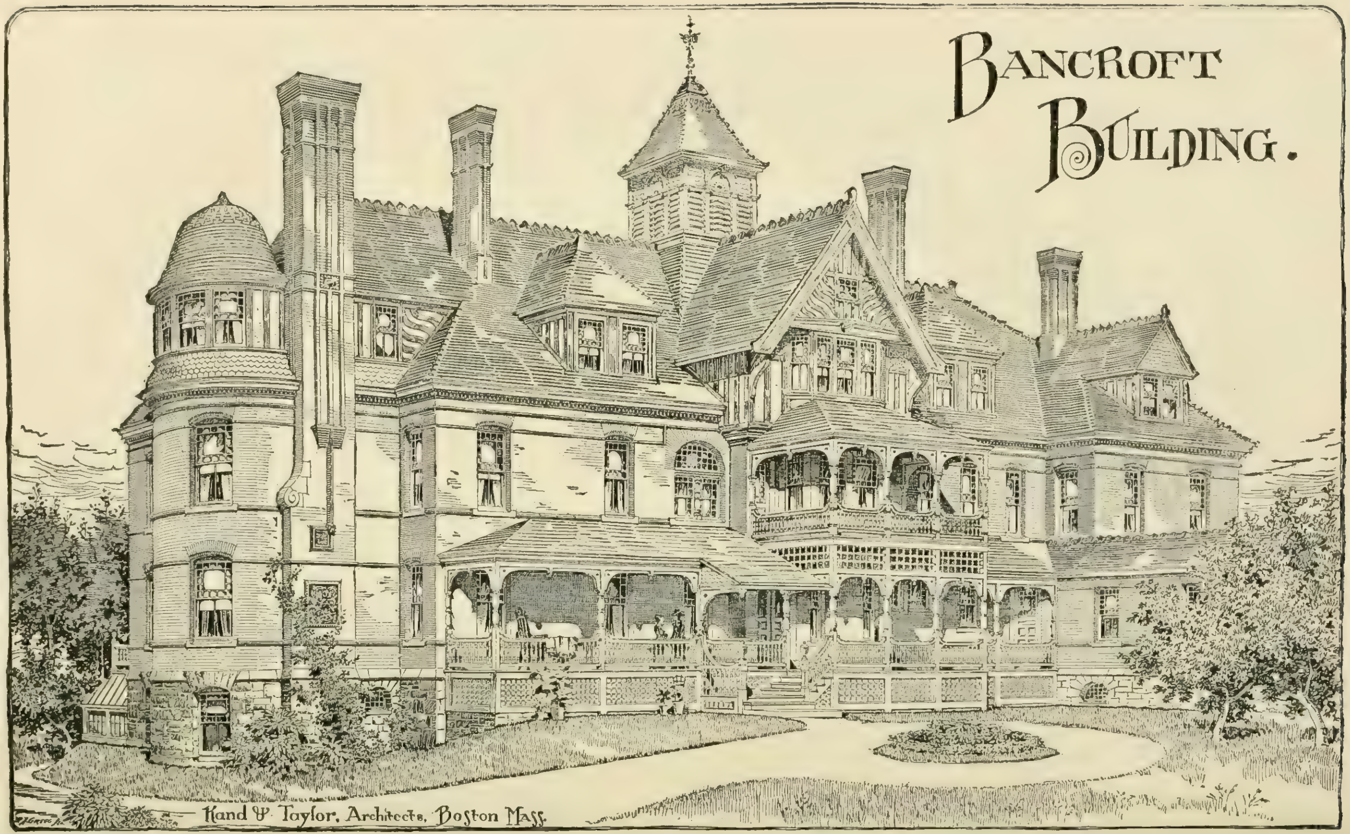
Appended is the death record.

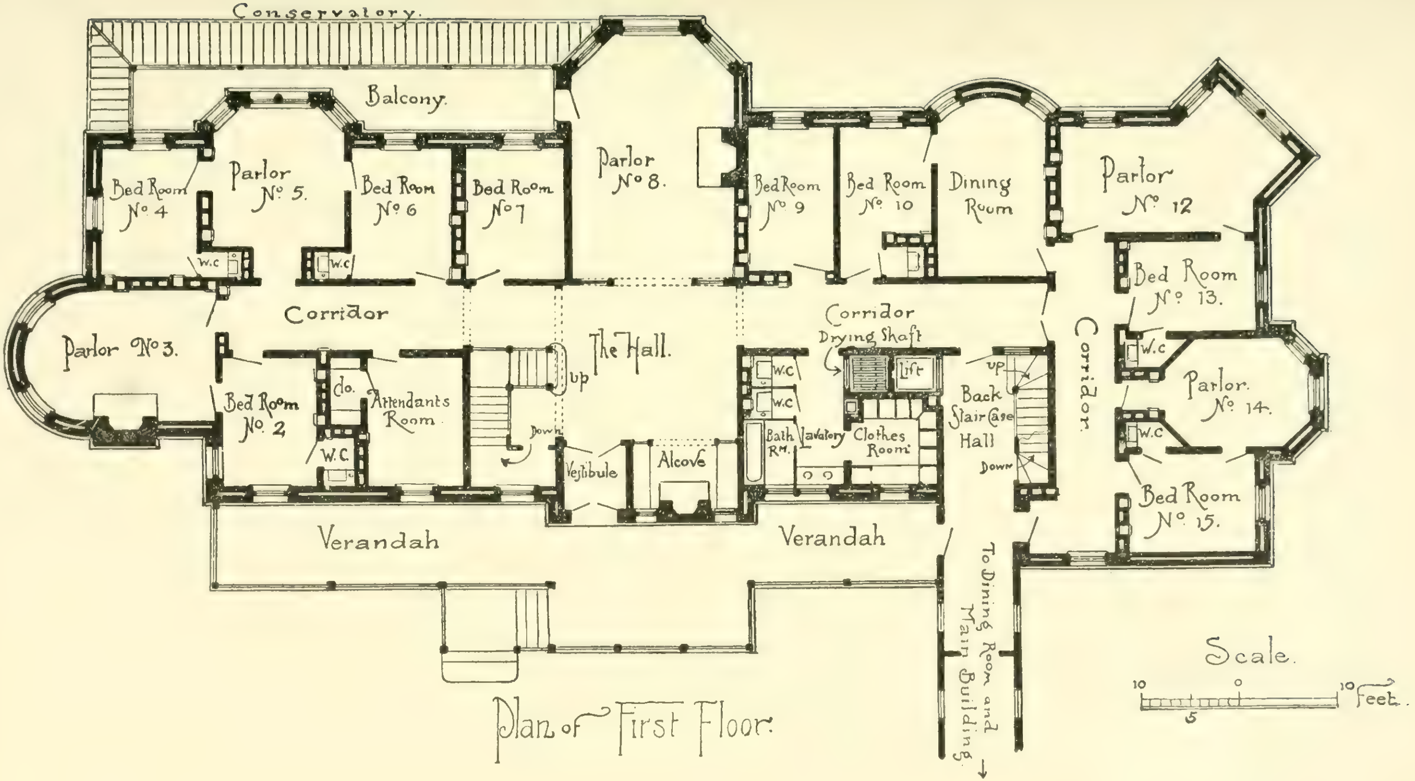
John McCarty, phthisis, Feb. 23, 1887.

HENRY M. FRENCH,
Physician.


P. F. GOIST DEL.

THE NEW HAMPSHIRE ASYLUM FOR THE INSANE.


BANCROFT BUILDING.
Rand & Taylor, Architects, Boston Mass.


Plan of First Floor.

ANNUAL REPORTS

OF THE

BOARD OF VISITORS, TRUSTEES, SUPERINTENDENT,
TREASURER, AND FINANCIAL AGENT

OF THE

NEW HAMPSHIRE
ASYLUM FOR THE INSANE

TO THE

GOVERNOR AND COUNCIL,

JUNE, 1887.

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

REPORT OF THE BOARD OF VISITORS.

STATE OF NEW HAMPSHIRE.

EXECUTIVE DEPARTMENT.

CONCORD, April 20, 1887.

The Governor and Council, president of the Senate, and speaker of the House, as required by law, having visited the Asylum for the Insane, inspected its several departments, and examined into the condition of the patients therein, are satisfied that the design of the institution is carried into full effect by the present management.

MOODY CURRIER,
Governor.

CHESTER PIKE,
Pres. of the Senate.
EDGAR ALDRICH,
Speaker of the House of Reps.

CHAS. W. TALPEY,
B. A. KIMBALL,
M. L. MORRISON,
P. UPTON,
J. W. JEWELL,
Councilors.

OFFICERS OF THE INSTITUTION.

BOARD OF VISITORS.

(EX OFFICIO.)

His Excellency MOODY CURRIER.
Hon. CHARLES W. TALPEY.
Hon. BENJAMIN A KIMBALL.
Hon. MORTIER L. MORRISON.
Hon. PETER UPTON.
Hon. JOHN W. JEWELL.
Hon. CHESTER PIKE, *President of the Senate.*
Hon. EDGAR ALDRICH, *Speaker of the House of Representatives.*

BOARD OF TRUSTEES.

GEORGE B. TWITCHELL, M. D., Keene, *President.*
JOSEPH B. WALKER, Concord, *Secretary.*
EDWARD SPALDING, M. D., Nashua.
EMERY J. RANDALL, Somersworth.
WM. H. H. MASON, M. D., Moultonborough.
ELLERY A. HIBBARD, Laconia.
WILLIAM G. PERRY, M. D., Exeter.
JOHN H. GEORGE, Concord.

WATERMAN SMITH, Manchester.
DEXTER RICHARDS, Newport.
JEREMIAH F. HALL, M. D., Portsmouth.
C. P. FROST, M. D., Hanover.

RESIDENT OFFICERS.

C. P. BANCROFT, M. D., *Superintendent.*
EDWARD FRENCH, M. D., *First Assistant Physician.*
A. C. NASON, M. D., *Second Assistant Physician.*
Mr. J. H. CARR, *Clerk and Steward.*
Mrs. FANNY B. CARR, *Housekeeper.*
Mr. HENRY GREEN, *Farmer.*

VISITING COMMITTEE FOR 1886–87.

FIRST HALF OF MONTHS.

April, 1887,	WHOLE BOARD OF TRUSTEES.
May,	Dr. J. F. HALL.
June,	E. A. HIBBARD.
July,	Dr. C. P. FROST.
August,	Dr. WILLIAM G. PERRY.
September,	Dr. W. H. H. MASON.
October,	E. J. RANDALL.
November,	Dr. G. B. TWITCHELL.
December,	Dr. W. G. PERRY.
Jan., 1888,	DEXTER RICHARDS.
February,	Dr. GEORGE B. TWITCHELL.
March,	J. B. WALKER.

SECOND HALF OF MONTHS.

April, 1887,	WHOLE BOARD OF TRUSTEES.
May,	DR. W. H. H. MASON.
June,	WATERMAN SMITH.
July,	E. J. RANDALL.
August,	DR. J. F. HALL.
September,	DEXTER RICHARDS.
October,	WATERMAN SMITH.
November,	J. B. WALKER.
December,	E. A. HIBBARD.
Jan., 1888,	DR. C. P. FROST.
February,	JOHN H. GEORGE.
March,	JOHN H. GEORGE.

REPORT OF THE TRUSTEES.

To His Excellency the Governor and to the Honorable Council:

The Trustees of the New Hampshire Asylum for the Insane present this, their

FORTY-FIFTH ANNUAL REPORT.

The history of the asylum the past year is a record of high success and usefulness. It has continued self-supporting. The number of admissions has been large, and that of the recoveries has been gratifying.

The number of patients at the date of this report is three hundred and thirty.

For a statement in detail of the admissions, recoveries, and discharges, as well as of the medical condition of the house, you are respectfully referred to the accompanying report of the superintendent, herewith submitted for your examination.

FINANCES.

The finances of the asylum are in a satisfactory condition. The debt of twenty thousand dollars, incurred in the erection of the Bancroft building, has been reduced to eleven thousand. Installments of three thousand dollars and the semi-annual interest at five per cent become due each year until the loan is fully paid.

The last is payable in 1890. For particular statements of the last year's receipts and expenditures, as well as of the investments of the permanent funds, your attention is invited to the accompanying reports of the treasurer and of the financial agent.

LEGACY OF CATHARINE FISK.

The period of fifty years, at the end of which the legacy of the late Catharine Fisk, of Keene, was to be paid to the asylum, will expire the present year. It is respectfully recommended that the trusteeship of this fund, now held by the State, be continued, in the same manner as are those of the Kimball fund and of the Agricultural College fund, and that the income be paid semi-annually to the asylum.

WORK-SHOP.

During the last year, a work-shop for the exercise and recreation of male patients has been established. Some forty-four have occupied more or less of their time in it, and have received perceptible benefit, both mental and physical. Under the immediate supervision of Mr. A. F. Tandy, one of our supervisors, its operations have been successfully conducted, and the enterprise has thus far been a success. There is every reason to suppose that it may be continued upon a self-sustaining basis, and become an important curative agency of the asylum. Its early enlargement is imperatively demanded. This can be easily accomplished, as the building it occupies has ample unoccupied room which can be fitted for use at a small expense.

The principal work thus far done has been the renovation of mattresses, the manufacture of corn-brooms, and the mending of patients' clothes. Several other industries may be introduced, and, we have no doubt, pursued successfully as soon as the necessary room has been provided. The suggestion of such an enterprise, to afford occupation to male patients in winter, was made some years ago by one of our trustees, the late Isaac Adams, of Sandwich, who gave to the asylum the sum of one thousand dollars to aid in its establishment. The need of such a shop has been most severely felt at that season when the severity of the weather confines many patients more closely to the halls than their highest interests require.

Experience, both here and elsewhere, is demonstrating more and more conclusively that a large portion of the insane are benefited by a certain amount of wisely selected mental and physical exercise. This tends to turn the thoughts of the disordered mind from within to outward objects. If we compare the methods of treatment pursued at this asylum forty years ago with those of to-day, it will be seen that they differ much in this particular. To afford such exercise and recreation in summer is an easy matter, but in winter, when out-of-door occupation is cut off by the cold, it is very difficult. It is hoped that the effort above mentioned may not only prove a lasting success, but the initiation also of others more important in the same direction.

DUNKLEE AND LONG POND LOTS.

Since our last report, enough of the Dunklee lot, so called, to furnish full sweep to the new avenue now in process of construction has been purchased. Another tract of land of about eleven acres, lying upon the westerly shore of Long Pond, has been bought for a summer sanitarium for our household. During the last season it was leased of its proprietor, and upon it was erected a small temporary structure of wood. It is distant from the asylum about two miles, and can be reached by a pleasant walk, by the horse railroad and steamboat, or by carriages over the ordinary highways. It has a frontage of about sixty-five rods upon the pond, from which it rises to the westward, by a gentle ascent, some seventy to one hundred feet. So fond were the patients last season of visiting this locality, and so beneficial to their mental and physical health were these excursions found to be, that it was deemed best to purchase the land. It is hoped that at no distant day a larger building and more extensive accommodations may be secured, and that, in this acquisition, the asylum will secure to its patients a new and very important remedial agency.

The fine scenery in full view on the north, east, and south, and the broad expanse of water in front, enlivened continually by steamers and lighter craft, afford continual diversion to those having the leisure to enjoy them. The broad range of hills in the rear protects this locality from most of the chilly winds of early spring and late autumn, and renders its climate delightful from May to November.

This marked departure from the ordinary routine of asylum life is new with us, but the experience of other kindred institutions, both in this country and abroad, has been such as to lead to high anticipations of the benefits likely to result from it.

IMPROVEMENT OF GROUNDS.

During the past year important progress has been made in the construction of the new avenue on the south side of the farm, leading from the Oaks to the avenue around the pond and meeting it near the barns. The farther drainage of the low ground of the farm has also been prosecuted, and nearly completed. Many thousands of feet of stone and tile drains have, from first to last, during the last twenty-five years, been laid, and through their agency our wet grounds have been changed to some of the best within our bounds. All of this work has been executed in substantial conformity to the comprehensive plan of improving the asylum grounds furnished, after careful study, by Mr. Weidenman, landscape gardener, in 1872, a plan which has proved of inestimable value in the gradual prosecution of the extended improvements since made upon the lands of the institution.

WATER SUPPLY.

One of the absolute essentials to successful asylum treatment is an ample sufficiency of pure water. Without this, high results are unattainable. In the early days of our institution the supply was meager. For the last few years, as we are happy to state, it has been copious, constant, and entirely satisfactory, both as to quality and quantity. It has also been inexpensive and afforded at a cost hardly appreciable in the daily expenditures.

But this blessing did not come by wishing only. Its attainment is the result of much weary waiting and of many efforts in different directions, which proved but partially successful until 1881. It may be interesting to trace the progress of these endeavors from their beginning until the present time.

The initial effort was the sinking of a well, probably by the builders of the first asylum structures, about 1841. This, although no longer used, remains in good condition in front of the Fisk wing and near its junction with the Center building. When in use its water was slowly raised by a force-pump, laboriously worked by hand power. The remembrances of that old pump must have been among the last to fade from the memories of those who toiled at its handle. The most primitive shadoof on the banks of the Nile could have been no more fatiguing or less satisfactory. A comparison of it with the agencies now in use shows most conclusively the progress made in water elevation during the last half century.

The insufficiency of this supply was apparent at the first, and one more abundant was sought at an elevation sufficient for its transfer to the asylum by the force of gravity. Such was found on the south side of Rum Hill, about half a mile distant, and on the 22d day of January, 1841, for the sum of one hundred dollars, the trustees bought of Benjamin Gale "a right to enter on my pasture land, situated in said Concord, northerly of the Hopkinton road, on what is called Rum Hill, and to such spring therein, and take and convey therefrom, without let or hindrance, by pipes or aqueducts, any water from the springs in said pasture that may be necessary for all purposes and uses of said asylum." *

Two large wells, some eight or ten feet deep, and of half that diameter, were here sunk, and the water collected therein was conveyed in a half or three-quarter inch lead pipe to the asylum. Notwithstanding the unsavory name of the locality, the water proved satisfactory in quality, but it was of insufficient quantity. In his annual report for 1843, the superintendent, Dr. Chandler, says: "The aqueduct, though defective, has afforded us twenty-five barrels of pure water daily." Those springs and the well above mentioned were the asylum's sole dependence for water during the next five or six years.

As the number of the patients and employés increased, this supply became insufficient. In 1848, when the household numbered one hundred and twenty-five, the springs afforded a daily supply of less than one thousand gallons (825), or $6\frac{3}{5}$ gallons per inmate, to meet all the demands of the house, laundry, and barns. This, of course, was not merely a dearth, but came so near to being a famine as to be unendurable, and a new supply and more abundant

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* Merrimack County Records, Vol. 64, page 373.

was consequently sought. This was soon found, and very near by.

It so happened that Bow Brook, a small but pretty constant stream, ran through the asylum farm, its channel approaching at one point within twenty or thirty rods of the buildings. Its course was through a level meadow of some six or seven acres, which was surrounded on all sides by hills, except at the northwest and southeast for short distances, where it entered and left this section of the farm.

It was found, upon examination, that the construction of a short dam of less than twenty feet in length and seven or eight feet high at the latter point would arrest the stream and secure a pond of nearly equal area with the meadow upon its banks. This was accordingly done in June, 1848, and the pond secured. It was at once apparent that the quantity of water flowing over the dam was far in excess of all the wants of the asylum, and of sufficient purity for all purposes except those of the kitchen and dining-room. For these, the well and the Rum Hill springs were more than sufficient.

The question next arising was, how shall the water of the pond be elevated to the buildings? The attic tanks, which called for the largest supply, were some ninety feet above the surface of the pond. The agency of a Montgolfier's hydraulic ram was suggested. Having been thoroughly examined, this was adopted and put in operation. It raised to the highest tanks a sufficient portion of the water flowing into it to meet every requisition. Now, for the first time in its entire existence, the asylum enjoyed an abundant supply. In 1849 the superintendent, Dr. McFarland, reported the entire expense of the "hydraulic works for the supply of water" as four hundred and forty-five dollars and ninety-two cents.*

At the same time he called attention to the introduction of bathing-rooms to the asylum, — an important sanitary agency, which the want of sufficient water had before kept in abeyance.* Up to that time there had been but one bathing-tub at the asylum for all of its one hundred and twenty-five inmates, and that was located in the one room of the laundry which could be occupied for bathing at such times only as it was vacated by its ordinary occupants. His earnest appeal for bathing-rooms and better-located water-closets sounds strange at this day, but he only uttered what was then real, unexaggerated truths. He remarks: "The bathing conveniences of the asylum have never been fully sufficient to comply with the wants of such an institution. The only bathing-room is chiefly used for other purposes. A bath-room should be attached to each hall. If remote, the use of such an important hygienic agent is too apt to be resorted to less frequently than is really demanded. The difficulty which has heretofore existed in respect to the supply of water for the asylum we hope will be removed by the use of an hydraulic apparatus to elevate water from the stream, about three hundred feet in the rear of the buildings. Should the measures now being put in operation prove successful, sufficient water will be obtained to supply the present deficiency. If bathing-rooms are supplied, the most eligible plan would seem to be to erect an appendage to each wing, sufficient to afford a room ten feet by twelve to each hall. Hot and cold water should then be admitted freely into cast-iron bathing-tubs in each room. By removing into the same appendage the water-closets, which are now in too close proximity to the halls, there will be no risk of any atmospheric impurity in close weather." †

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* Report of 1849, page 47.

For potable water the asylum depended for some years longer upon the well and the Rum Hill springs. But the labor incident to pumping and the vexatious accidents attending the aqueduct service led to inquiries for a supply of this from another source. A spring of pure water was found, and properly excavated and lined with stone, a few feet south of the one now in use. This afforded in moderate but sufficient quantity good drinking water, and upon it, with some enlargements, the institution depended until the autumn of 1881.

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* Report of 1849, page 41.

† Report of 1848, page 25.

Upon the introduction of steam as a warming agent into the asylum, a small engine of about twelve-horse power was set up in the laundry, and all water used at the house was raised by a steam-pump. In 1860 the original wooden dam had become so far decayed that its removal was demanded, and not far from that time it was superseded by a new one of granite, made in the most thorough manner. This bids fair to do satisfactory service for centuries to come.

As the buildings of the asylum became more and more numerous, from time to time, to keep pace with the increasing number of patients, more water than the spring could supply became imperative. From careful calculations it was concluded that a well of large size, sunk a short distance north of the spring, would, with the existing supply, afford a sufficiency.

Accordingly, in the autumn of 1881, in the midst of a very dry period, the site of it was selected and definitely marked out, and the sinking of a well fifty feet in diameter was commenced. It had been previously decided that in case the supply proved insufficient, this was to be supplemented, as far as necessary, by filtered water from the pond.

Soon after the excavation commenced, a strata of gravel was reached and considerable springs came into the pit from the southeast, and, as it progressed, others from other directions made their appearance. So great became the flow that a steam-pump became necessary to remove the water, which ran in such quantities as to prevent the progress of the work. At first this was operated during the day only, but as the well was deepened the pumping was necessarily continued during the night as well. As the excavation was lowered, additional springs appeared on almost all sides, and ere long a second pump became necessary and was set at work. For a month or thereabouts the work went on, and the well was sunk through strata of gravel, clay, and sand, until at a depth of fifteen feet a bed of clean quicksand was reached, and prevented further descent without curbing.

The abundance of water now secured indicated conclusively that this depth was sufficient. The lining of the sides by an eighteen-inch wall of split granite was then begun. The presence of the water rendered the placing of the bed-stones a work of some difficulty, but it was successfully accomplished, and carried to a level with the ground's surface. Upon this as a foundation was erected a circular building of brick, with a slated roof, which has since protected the water of the well from rains and all extraneous matters which might affect its purity. The walls of this building are about eighteen feet high, and are pierced at intervals with screened windows, which permit and, in fact, favor a constant circulation of air.

The diameter of this well is just fifty feet. Except when temporarily lowered, as it is every day while the tanks are being filled and for some time afterwards, the water maintains a constant depth of about seven or eight feet, varying somewhat with the dryness of the period. It rarely rises above that height or sinks below it. At this point the well and its springs, or rather their sources, seem to be in equilibrium.

There have been some very dry seasons since this well was made, but no indications of a failing supply of water have been seen. The water is white, pure, and of the best quality. It is used for all house purposes, to the amount of about forty thousand gallons a day. Should the number of patients be doubled, our present water supply would probably suffice for their wants.

The yearly cost of this water is mostly the expense of pumping it, which is done by powerful steam-pumps. This is estimated at about three hundred and fifty dollars a year. If to this amount there be made an addition of fifty dollars for occasional renewals and repairs of pipes and pumps, we shall find the yearly water bill of the asylum to be about four hundred dollars, or two and seven tenths of a cent per thousand gallons. If the same quantity which is now used — much of which, owing to the asylum's elevation, would have to be pumped — were purchased of the city water-works at their established price of thirteen and a half cents per thousand gallons, it would cost the institution about two thousand dollars ($1,971) a year.

In this well the asylum has secured a very great desideratum,— an abundance of good water at a cost sufficiently low to allow of its use with the utmost freedom. Its importance cannot be exaggerated, and the benefits afforded by it are as valuable as they are constant.

The farm has been a source of revenue the past year. Your attention is respectfully called to the usual statement accompanying this report, made by its manager, of the amounts and cash values of its several products. It will be seen that milk is the most valuable of these. This is one of the most important articles of diet used at the asylum, and has, for the last few years, all been produced upon the farm.

Your attention is particularly invited to the present condition of our heating apparatus. Of the five boilers in the boiler-house, which furnish three fourths or more of all the steam used, three — which have been in constant use for from twenty-three to twenty-five years — are no longer serviceable, and must be renewed the present year. For an estimate in detail of the cost of new ones to replace these, and of the considerable amount of new piping and radiators required, you are respectfully referred to the accompanying report of the superintendent. It will be perceived upon a moment's reflection that such an outlay belongs to construction, and is too great to be carried in the annual expense account. It is important that the Legislature make early provision to relieve the asylum of this embarrassment.

Respectfully submitted.

George B. Twitchell,
John H. George,
Dexter Richards,
Carlton P. Frost,
Emery J. Randall,
Waterman Smith,
William G. Perry,
Ellery A. Hibbard,
Edward Spalding,
Joseph B. Walker,
Trustees.

Concord, N. H., April 14, 1887.

REPORT OF THE SUPERINTENDENT.

The superintendent respectfully submits the forty-fifth annual report of the asylum, for the year ending March 31, 1887.

The year commenced with three hundred and seventeen patients,—one hundred and thirty-six men and one hundred and eighty-one women.

The number admitted during the year was one hundred and forty-three,—eighty-three men and sixty women,—making the whole number during the year four hundred and seventy-one,—two hundred and twenty-six men and two hundred and forty-five women.

The number discharged during the year was ninety-five, of whom fifty-four were men and forty-one were women

The daily average through the year has been 321.34, of whom 137.22 were men and 184.12 were women.

Of the four hundred and seventy-one patients under treatment, seventy-one were known to have the suicidal impulse; one of this number, after many determined and persistent attempts, and in spite of every precaution, succeeded in accomplishing her purpose by suspending herself with one of her stockings to the foot of her bedstead.

Of the one hundred and forty-three patients admitted during the year, ninety were apparently incurable and forty-eight apparently curable.

Of the three hundred and twenty-eight patients remaining in the asylum at the end of the year, twenty-four only have prospects of being curable, and as many as three hundred and two are apparently incurable. This shows, as usual, how small a percentage of the insanity seen in asylums is curable, and illustrates the constant tendency to accumulation of chronic cases. But one ought not, nevertheless, to lose sight of the fact that, though many of these cases cannot be cured, they can be vastly relieved and improved, and that by hospital care and treatment their mental intelligence and integrity may be preserved many years, and perhaps during their natural lives.

During the year there have been thirty-three deaths. Of these, twenty-two were the result of such organic disease of the brain as would preclude all hopes of recovery, and the natural course of which tended toward death. No acute infectious or contagious disease, other than a mild epidemic of mumps, has invaded the house; and the general sanitary condition has been excellent. The death rate has been for the year 7.1 per cent. As is the case in every year, many patients are brought in an advanced and exhausted state of acute mania or melancholia, and at a period of their disease when little or nothing can be done for their assistance.

The past year has been signalized by the completion and operation of the winter work-shop for patients, by the purchase of a portion of the land bordering on the southern part of the farm, and by the purchase of between eleven and twelve acres on the western shore of Lake Pennacook. While the purchase of the entire estate on the southerly border of our farm would have been desirable if practicable, still the possession of the northerly half will facilitate the completion of our border driveway and materially improve that part of our grounds. The winter work-shop for patients has fully realized all that we had anticipated from it, and I think will form an important landmark in the improved methods of treatment adopted by the asylum. As this was the first year of its operation, and the first organized attempt at developing skilled labor among the patients, our selection of the kind of work to be done was somewhat experimental. The upholstering of mattresses, the manufacture of brooms, the reseating of chairs, and a small amount of tailoring were finally adopted as the most practicable forms of industry. Another year will undoubtedly witness the introduction of a greater variety of labor. As many as thirty or more men have been employed daily in this way with great benefit to themselves. Especial credit is due the supervisor, Mr. A. F. Tandy, for his interest in learning the different industries himself, and in teaching the patients. Without his hearty co-operation the successful inauguration of the shop would have been much more difficult.

Of the value of work as a method of treatment, and as a means of improving the condition of the chronic insane, there can be no doubt. It was a wise foresight that led our own Isaac Adams to provide for this very object, and it is gratifying to know that in so short a time we have already begun to reap the benefits of what he had anticipated. Nothing prevents mental deterioration so surely as healthy diversion and occupation of the mental faculties. There comes a time in the history of every acute case when such diversion is of the greatest importance to the individual, and it often happens that the chronic and incurable case by being properly interested in some healthful occupation is prevented from sinking into a more helpless dementia ; and by the very fact that healthful ideas are made, as far as is possible, to supplant those of morbid character, it results that the patient is far less troublesome and mischievous than he would otherwise become. The change from the monotony of the ward to the activity and even sociability of the work-shop, the diversion of the mind to the task in hand, and the gradual stimulation of the intelligence afforded by labor carefully regulated, all seem to recall the patient to himself, and, if incurable, prevent a still further self-absorption and deterioration.

It is interesting in this connection to note that Pinel, in the early part of this century, discussed the matter of labor with great acuteness. He considered that mechanical employment of various kinds should be a fundamental law in the treatment of the insane in hospitals. Since Pinel wrote, the subject has not been urged with the earnestness that it should command until within comparatively recent times. Now all alienists recognize the great value of varied employment for the insane, and the time is near at hand when no well-appointed hospital for the insane will be without its work-shop. Dr. Desmaisons, in a little book entitled "Asylums for the Insane in Spain," refers to Villargoitia, a Spanish specialist, who, in a special letter to the committee of administration of the hospital at Madrid, maintained that cures were more frequent among the lower and poorer classes, who, while under detention at the asylum, are compelled to work; whereas cures are less frequent among the nobility, who, while in the asylum, are allowed to remain in a state of pernicious idleness.

In our northern latitude a majority of the patients are debarred from outside work fully six months of the year, —simply because there is no work to do. During this season the work-shop is of the greatest possible benefit. It seems a reasonable conclusion that labor may be prescribed by the physician like medicine, and that there are cases undoubtedly where a reasonable and firm insistence upon its judicious employment should be maintained.

The purchase of the land bordering on Lake Pennacook, and about four miles distant from the asylum, seems to me to be of the greatest importance in the future history of the treatment of patients at this institution. The way is now open for the erection of a summer cottage for those patients who are in a condition to be benefited by the change of scene afforded thereby. The location is a charming one. The shore of the lake is fringed with a growth of pines, birches, oak, and low undergrowth. By judicious pruning and thinning out, a delightful shady retreat can be made close to the water's edge. At one point, and connected with the mainland by partially submerged bed of rocks about one hundred feet in length, is a small island covered with tall pines. By a little labor this island may be connected with the mainland by a rustic bridge. A slight elevation on the mainland some fifty feet above the level of the water, with a broad, flat expanse on its summit, forms an admirable site for a cottage. At a little distance from this elevation is a large open field, which would make a capital play-ground. Few institutions are so fortunate as to have so delightful a spot for the erection of a summer retreat.

During the last summer daily camping parties of men visited this place, generally twice a week. Allusion was made in the last report to these camping parties. During the past summer many such trips were made under the direction of Dr. Nason and Mr. Tandy. According to the length of the day, the party, numbering twelve to fifteen men, would start at a given hour in the morning from half-past 5 to 7 o'clock, walk to the camp, cook their breakfast, lounge about during the day, fishing, playing ball, or indulging in other amusements; cook dinner and supper and return, reaching home by 7 or 8 o'clock in the evening. It is needless to add that no other form of diversion has proved of greater interest and profit. A keen appetite, the soundest sleep, and a healthy stimulation of the mental faculties have been a few of the benefits resulting from this most diverting pastime. A few parties of women were taken to the same spot in barges and spent the day. At no very distant date it is to be hoped that a summer cottage will throw open the attractions of the place to a larger number, and add another remedial measure of the greatest value to those already possessed by the asylum.

In several tables there appears a certain number styled "not insane." These refer chiefly to inebriates or victims of the opium habit. The fact that such cases must be admitted to a hospital for the insane is greatly to be deplored. Still it is none the less a fact that these unfortunate persons must at times be detained somewhere. During those periods in which they are under the influence of alcohol they often become insane, are irresponsible, and even dangerous. It is obviously necessary that they must at this time be cared for somewhere; and, unfortunately, the asylum is the only suitable place. A short residence — a few weeks, oftentimes a few days — suffices for the removal of every effect of alcohol upon their brains, and then they become most troublesome and uncomfortable cases. As a rule, they are unwilling to remain in the asylum, and oftentimes disaffect all the insane patients with whom they come in contact. They fill other patients with the same dissatisfaction that characterizes themselves, and often lead the really insane to feel that they are perfectly sane, and hence needlessly detained. No class of patients are more unwelcome to the asylum superintendent than the victims of the alcohol and opium habit.

What is obviously needed is special legislation applying to this very class, in distinction from the insane. It is very questionable whether under special legal commitment the asylum is the proper place for their detention; but in this State, at least, it is probably the only practicable place. The working of the new law lately passed in Massachusetts, authorizing the commitment of inebriates to the different insane hospitals of that State, has not proved altogether satisfactory. Dr. Fisher, superintendent of the South Boston Lunatic Hospital, very correctly criticises the law as defective in three ways: First, it commits inebriates to hospitals for the insane, where they are obviously out of place, instead of to special institutions; secondly, the law does not commit for a definite time, and hence immediately the inebriate is out of liquor he and his friends importune the superintendent for a discharge, while it is obvious that such discharge may not be for the patient's own best good; thirdly, the law does not allow, as it should, mild compulsory labor for this class of persons. The enforced idleness of the asylum is far worse for the inebriate than enforced labor, and the lighter kinds of work that are gladly performed by the insane do not meet with the inebriate's acceptance.

It is quite obvious that special legislation and special institutions are desiderata in the proper management and treatment of this class; that the law and the institution must contain in their essence just enough of the penal element to enable the management to detain the patient and enforce certain methods of treatment that are necessary for his own good. The larger and more populous States will doubtless solve this problem by ultimately separating the class of inebriates from the insane.

In our own State, while we may not have a separate institution, I think it eminently important that we should have special legislation recognizing this class; and, if the asylum is the necessary place of detention, such laws as will require their residence for a definite time.

GENERAL IMPROVEMENTS.

At the annual meeting of the trustees in April last it was decided to take such initiatory steps as would eventually lead to the adoption of low-pressure steam heating. Accordingly all the old apparatus located in the basement of the Peaslee building was removed, and new indirect radiators were placed there by the Walworth Manufacturing Company. The supply main was made sufficiently large to supply all future wants of the Peaslee and Chandler wings, as well as for any additional structure that might be erected upon that portion of the grounds. Many single rooms were provided with indirect heat, thereby facilitating the care of the sick as well as materially improving the ventilation. The enlarging of the air-chambers in the basement, with the additional admission of light and air, has greatly improved the appearance of that portion of the house. The same system of piping was also applied to the Center building. This proved the most difficult portion of the work, as many of the old ascending lines of pipe were circuitous, and new routes had to be made in many instances. The experience of the past winter in heating those portions of the house provided with the new apparatus has fully sustained our anticipations, and leads us to look forward to the time when the entire house shall be warmed on the low-pressure plan.

In accordance with your decision at the last annual meeting, careful estimates have been made of the entire cost of lowering the foundations of the boiler-house and remodeling the boiler-room itself, including the addition of a fire-proof ceiling, together with the necessary piping and the placing of three large new low-pressure steam-boilers. The estimates call for not less than $12,287.

It is not necessary for me to add that the condition of the old boilers, the safety and comfort of all who reside in the institution, demand that the above outlay should be made. In the annual report for 1886 attention was called to the age and general condition of these boilers. Two of them are twenty-five years old, and a third has been in use for twenty-three years. It is obvious that they have run as long as safety and economy should require. A change is, therefore, imperative, and whenever it is made a radical re-arrangement of the boilers and the boiler-house should be made. The above-mentioned estimate covers the entire cost of such improvements as are required by the latest and most approved methods of low-pressure steam heating.

Such expense is too large to be met under the item of permanent improvements, which are usually included in the running expenses of the asylum. A special legislative appropriation will be required to meet the cost of the proposed change. I recommend the matter, therefore, to your serious consideration, and for such further action as will be necessary to bring the matter before the next Legislature.

During the past year, and while the changes referred to in the last report were being made in ward 9, the entire plumbing of the Chandler wing was renewed from the basement to the attic. New closets, provided with automatic flush tanks, were put in place of the old apparatus, and all soil-pipes were carried out of the roof. Every portion of the system was thoroughly trapped and equipped with the latest and best plumbing devices for preventing the entrance of sewer gases. During the present year it is to be hoped that this most important sanitary work may be extended to those portions of the Peaslee building which are plumbed after the older and less secure methods.

During the past year the old lathing and plastering of the front offices, public waiting-room, and hall, as well as that of ward 4, all of which had become exceedingly dilapidated, was torn down and replaced. Advantage was taken at this time to newly paint the walls and ceilings of the public entrance and adjoining rooms, hoping thereby to obviate as far as possible the rather dark and uninteresting appearance given by the low ceilings and poorly lighted space way.

THE FARM.

Under the judicious management of Mr. Green the farm has proved sufficiently remunerative. Appended are the reports of crops, together with their market values, as well as the amount of milk raised.

The same general improvements on the grounds which have been in progress so many years were continued during the past summer and fall. A point has at last been reached where each year will witness a more manifest advancement toward completion. Every additional bit of grading and every new portion of ground brought under cultivation now begins to reveal its real value, and shows that the time is not far distant when every portion of our land will be under cultivation, and accessible by pleasant drives or walks. This is a result to be earnestly anticipated. The more diversified are our grounds, the more opportunities we have for keeping patients out of doors, and the greater facilities we have for preserving the same classification outside as well as inside the house, the more successful will be our treatment. One of the great difficulties which we have hitherto encountered has been the more or less restricted facilities for the taking out of patients into the open air during the summer months, and at the same time keeping the various classes of patients from coming in contact with each other. It is always unpleasant for the intelligent and convalescent patients to meet on their walks about the grounds the demented and chronic class. A larger and more accessible territory, and a number of interesting objective points on the premises that can be visited, will enable us to maintain that same separation and classification which we consider of so much importance in the house.

In this connection it is therefore interesting to note that several hundred feet of the border driveway have been completed, and a large area of underdraining and grading along the line of the brook was finished during the fall. About three hundred feet more of the brook wall were laid, and a large tract made ready for grading, and for the finishing of the driveway during the coming year. The final completion of this driveway will facilitate the taking out for short drives on our own grounds the very acutely excited patients or the more demented and untidy class whom we do not wish to carry on the more exposed public highway. The fact that we shall have such opportunities on our own grounds will be of great value. It seems to me that the day is not far distant when our airing courts will be largely abolished, and when patients will be taken out on various parts of the grounds, and when the personal supervision of the attendant will be preferable to that of the more unsightly high fence.

During the summer months the barn and adjoining buildings were entirely repainted.

ACKNOWLEDGMENTS.

The superintendent wishes to publicly thank all who have generously contributed to the entertainment of the patients during the winter months. Among those who have kindly assisted are the Day Dramatic Company, Mr. and Mrs. Ferrin, Our Club and Unity Club, Universalist Society, and Miss Annie Dietrich, in dramatic and musical entertainments. Mr. E. C. Taylor gave a delightful exhibition of legerdemain and jugglery on Thanksgiving Day; Dr. J. P. Bancroft a lecture on Rome; Mr. J. B. Walker a lecture on art; and Rev. Dr. C. B. Crane presented a book to one of the wards.

The proprietors of the following newspapers have gratuitously supplied the asylum with copies of their issues: "N. H. People and Patriot," "Daily Monitor," "Independent Statesman," "Union Democrat," "Nashua Gazette," "Morning Star."

No changes have occurred in the staff of resident officers, and the superintendent wishes to express his appreciation of their valuable assistance in the many trying duties of the year. As usual, the board of trustees have, by their cordial interest and support, most materially aided the superintendent in the work of the year.

C. P. BANCROFT,
Superintendent.

N. H. ASYLUM, March 31, 1887.

STATISTICAL TABLES.

TABLE I.

	Men.	Women.	Total.
Patients in hospital April 1, 1886	136	181	317
Cases admitted during the year	83	60	143
Discharged within the year	54	41	95
Viz., as recovered from first attack	11	6	17
as recovered from other than first	6	9	15
as much improved	6	6	12
as improved	10	6	16
as not improved	15	13	28
as not insane	6	1	7
Deaths	19	14	33
Patients remaining April 1, 1887	143	185	328
Number of different persons within the year	221	241	462
" " " admitted	77	59	136
" " " recovered	17	15	32
Daily average number of patients	137.22	184.12	321.34

TABLE II.

Showing Result in all under Treatment during the Year.

	Of those in asylum at beginning of the year.			Of those admitted during the year.			Total both classes.		
	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.
Discharged, recovered	9	6	15	8	9	17	17	15	32
" much improved	3	4	7	3	2	5	6	6	12
" improved	4	2	6	6	4	10	10	6	16
" not improved	7	7	14	8	6	14	15	13	28
Died	9	11	20	10	3	13	19	14	33
Remaining, improved	50	62	112	24	13	37	74	75	149
" not improved	52	84	136	15	26	41	67	110	177
Not insane	1	..	1	1	..	1	2	..	2

TABLE III.

Admissions and Discharges from beginning.

	Men.	Women.	Total.
Admitted	2,589	2,444	5,033
Discharged	2,379	2,190	4,569
" recovered	928	881	1,809
" improved	582	585	1,167
" not improved	489	417	906
Died	441	368	809

TABLE IV.

Showing the Number and Character of the Recovery in those recovered during the Year.

	Cases in which recurrency is not established.			Cases in which recurrency is established.			Total both classes.		
	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.
From first attack	11	6	17	..	..	..	11	6	17
" second "	..	2	2	..	..	..	..	2	2
" third "	..	1	1	3	1	4	3	2	5
" fourth "	..	1	1	2	..	2	2	1	3
" fifth "	..	..	..	..	1	1	..	1	1
" sixth "	..	..	..	..	1	1	..	1	1
" eighth "	..	..	..	1	1	2	1	1	2
" tenth "	..	..	..	..	1	1	..	1	1
	11	10	21	6	5	11	17	15	32

TABLE V.

Showing Duration of Insanity before Admission in those recovered during the Year.

	Men.	Women.	Total.
Less than one month	7	1	8
From one to three months	2	4	6
From three to four months	3	1	4
From six to twelve months	2	2	4
More than one year	3	7	10
	17	15	32

TABLE VI.

Showing Number of Admissions to this Hospital of those admitted this Year.

	Men.	Women.	Total.
Admitted the first time	60	41	101
" second "	13	9	22
" third "	3	4	7
" fourth "	2	3	5
" fifth "	2	1	3
" sixth "	2	1	3
" eighth "	1	..	1
" tenth "		1	1
	83	60	143

TABLE VII.

Showing the Number of the Attack in those admitted during the Year.

	Men.	Women.	Total.
First	59	43	102
Second	9	7	16
Third	8	4	12
Fourth	3	1	4
Fifth	3	1	4
Seventh	..	2	2
Eighth	1	..	1
Tenth	..	1	1
Eighty-sixth	..	1	1
	83	60	143

TABLE VIII.

Showing Duration of Insanity in those admitted during the Year.

	Men.	Women.	Total.
Less than one month	14	8	22
One to three months	11	8	19
Three to six months	4	4	8
Six to nine months	9	5	14
Nine to twelve months	2	..	2
Twelve to eighteen months	13	5	18
Eighteen months to two years	3	1	4
Two to three years	8	3	11
Three to four years	4	9	13
Five to ten years	6	8	14
Ten to fifteen years	2	5	7
Fifteen to twenty years	..	1	1
Twenty to thirty years	2	1	3
Thirty to forty years	..	1	1
Forty to fifty years	..	1	1
Not insane	5	..	..
	83	60	143

TABLE IX.

Showing Ages of those admitted during the Year.

	Men.	Women.	Total.
15 to 20 years	2	1	3
20 to 25 years	2	6	8
25 to 30 years	12	5	17
30 to 35 years	13	5	18
35 to 40 years	11	7	18
40 to 45 years	10	5	15
45 to 50 years	13	6	19
50 to 60 years	11	15	26
60 to 70 years	7	7	14
70 to 80 years	1	3	4
80 to 90 years	1	..	1
	83	60	143

TABLE X.

Showing form of Disease in Patients admitted during the Year.

	Men.	Women.	Total.
Mania, acute	4	9	13
Mania, sub-acute	7	3	10
Mania, chronic	11	16	27
Mania, recurrent	4	5	9
Mania, senile	2	3	5
Mania, circulatory	..	2	2
Mania, puerperal	..	1	1
Mania, hysterical	..	1	1
Melancholia, acute	4	6	10
Melancholia, sub-acute	5	..	5
Melancholia, chronic	7	4	11
Melancholia, recurrent	..	1	1
Dementia, chronic	4	1	5
Dementia, senile	3	..	3
Structural	5	2	7
Alcoholism	2	..	2
Epilepsy	1	..	1
Paresis	8	2	10
Hypochondriasis	3	..	3
Imbecility	1	1	2
Erotomania	..	1	1
Chronic insanity	7	2	9
Not insane	5	..	5
	83	60	143

TABLE XI.

Showing Complications in those admitted during the Year.

	Men.	Women.	Total.
Hereditary tendency	11	16	27
Intemperance	23	..	23
Insolation	5	..	5
Malaria	1	2	3
Dysmenorrhœa	..	2	2
Amenorrhœa	..	1	1
Constipation	..	1	1
Varicose ulcers	1	..	1
Syphilis	..	1	1
Phthisis	1	..	1
Pott's disease and epilepsy	1	..	1
Suicidal	22	17	39
Homicidal	7	2	9
	72	42	114

TABLE XII.

Showing Number with Suicidal Propensity under Treatment during the Year.

	Men.	Women.	Total.
Of those in hospital at the beginning of the year.	10	22	32
Of those admitted during the year	22	17	39
	32	39	71

TABLE XIII.

Civil Condition of those admitted during the Year.

	Men.	Women.	Total.
Single	22	20	42
Married	53	29	82
Widows	..	10	10
Widowers	5	..	5
Divorced	2	1	3
Unknown	1	..	1
	83	60	143

TABLE XIV.

Showing Occupation of those admitted during the Year.

	Men.	Women.	Total.
Household occupations	.	41	41
Farmers	21	..	21
Mill operatives	7	6	13
Laborers	7	..	7
Machinists	4	..	4
Jewelers	4	..	4
Painters	3	..	3
Carpenters	3	..	3
School-teachers	..	3	3
Shoe operatives	2	1	3
Physicians	2	..	2
Sawyers	2	..	2
Clerks	2	..	2
Sailors	2	..	2
Wheelwrights	2	..	2
Piano-tuner	1	..	1
Baker	1	..	1
Photographer	1	..	1
Hostler	1	..	1
Student	..	1	1
Merchant	1	..	1
Printer	1	..	1
Locomotive engineer	1	..	1
Railroad conductor	1	..	1
Type-setter	..	1	1
Cloak-maker	..	1	1
Architect	1	..	1
Policeman	1	..	1
Wool-sorter	1	..	1
Carriage-trimmer	1	..	1
Hotel-keeper	1	..	1
Teamster	1	..	1
None	8	6	14
	83	60	143

TABLE XV.

Showing Nativity of those admitted during the Year.

	Men.	Women.	Total.
New Hampshire	58	35	93
Massachusetts	2	11	13
Vermont	2	4	6
Maine	3	..	3
Connecticut	1	..	1
Ireland	4	7	11
Canada	4	1	5
England	2	..	2
New York	2	..	2
Rhode Island	1	..	1
California	..	1	1
Germany	1	..	1
Scotland	1	..	1
New Brunswick	..	1	1
Nova Scotia	1	..	1
Azore Islands	1	..	1
	83	60	143

TABLE XVI.

Residence of those admitted during the Year.

	Men.	Women.	Total.
Hillsborough county	26	18	44
Rockingham "	10	5	15
Grafton "	11	4	15
Merrimack "	7	7	14
Cheshire "	7	4	11
Belknap "	5	3	8
Coös "	6	2	8
Strafford "	2	5	7
Sullivan "	4	1	5
Carroll "	1	3	4
Massachusetts	1	3	4
Vermont	1	3	4
Connecticut	1	..	1
Canada	1	1	2
	83	60	143

TABLE XVII.

Showing by what authority committed.

	Men.	Women.	Total.
By friends	46	51	97
By towns	14	2	16
By counties	13	4	17
By courts	10	3	13
	83	60	143

TABLE XVIII.

Showing by whom supported.

	Men.	Women.	Total.
By self or friends	50	49	99
By town or city	15	5	20
By county	16	5	21
By State	2	1	3
	83	60	143

TABLE XIX.

Deaths in the Year and their Causes.

	Men.	Women.	Total.
Structural disease of brain	9	3	12
Paresis	3	2	5
Exhaustion from acute mania	2	1	3
Exhaustion from chronic melancholia	..	2	2
Exhaustion from chronic dementia	1	1	2
Phthisis pulmonalis	..	2	2
Exhaustion from acute melancholia	1	..	1
Exhaustion from chronic mania	1	..	1
Exhaustion from puerperal mania	..	1	1
Exhaustion from epilepsy	1	..	1
Exhaustion from diarrhœa	..	1	1
Pericarditis	1	..	1
Suicide (by hanging)	..	1	1
	19	14	33

TABLE XX.

Ages at Time of Death.

	Men.	Women.	Total.
Between 20 and 30 years	..	2	2
" 30 " 40 "	6	1	7
" 40 " 50 "	8	4	12
" 50 " 60 "	1	3	4
" 60 " 70 "	1	2	3
" 70 " 80 "	2	2	4
" 80 " 90 "	1	..	1
	19	14	33

TABLE XXI.

Showing Ages of those Remaining at the end of the Year.

	Men.	Women.	Total.
Between 20 and 30 years	24	16	30
" 30 " 40 "	38	40	78
" 40 " 50 "	30	46	76
" 50 " 60 "	24	34	58
" 60 " 70 "	19	28	47
" 70 " 80 "	7	17	24
Over 80 years of age	1	4	5
	143	185	328

TABLE XXII.

Showing Duration of Disease in those Remaining.

	Men.	Women.	Total.
Less than 1 month	1	..	1
“ “ 2 months	1	..	1
“ “ 3 “	1	1	2
From 3 to 6 “	2	5	7
“ 6 to 12 “	9	6	15
“ 12 to 18 “	8	6	14
“ 1½ to 2 years	6	2	8
“ 2 to 3 “	8	13	21
“ 3 to 5 “	15	18	33
“ 5 to 10 “	23	40	63
“ 10 to 15 “	17	31	48
“ 15 to 20 “	13	15	28
“ 20 to 25 “	12	9	21
“ 25 to 30 “	4	5	9
“ 30 to 40 “	5	11	16
Over 40 years	4	7	11
Unknown	12	16	28
Not insane	2	..	2
	143	185	328

TABLE XXIII.

Prospects of Recovery in those Patients admitted during the Year.

	Men.	Women.	Total.
Curable (apparently)	25	23	48
Incurable (apparently)	53	37	90
Not insane	5	..	5
	83	60	143

TABLE XXIV.

Prospects of those Remaining at the end of the Year.

	Men.	Women.	Total.
Curable (apparently)	10	14	24
Incurable (apparently)	131	171	302
Not insane	2	..	2
	143	185	328

TABLE XXV.

Statistics of Admissions, Discharges, and Deaths, from the opening of the Asylum.

Year.	Admitted.	Discharged and died.	Recovered.	Improved.	Unimproved.	Died.	Whole number under treatment.	Remaining at end of hospital year.	Daily averages of the hospital.		
									Men.	Women.	Total.
1843	76	29	12	10	6	1	76	47	....	....	....
1844	104	81	37	20	19	5	151	70	....	....	....
1845	88	82	37	17	22	6	158	76	....	....	....
1846	98	76	26	23	16	11	174	98	....	....	....
1847	89	87	38	17	23	9	187	100	....	....	....
1848	92	83	29	20	26	8	192	109	....	....	....
1849	81	76	36	15	11	14	190	114	....	....	....
1850	103	90	45	18	20	7	217	127	....	....	....
1851	88	98	45	25	16	12	215	117	....	....	....
1852	107	106	66	13	16	11	224	118	....	....	....
1853	132	107	65	25	11	8	250	143	....	....	....
1854	141	123	63	24	22	14	284	161	....	....	....
1855	95	91	50	20	9	12	246	155	....	....	....
1856	85	96	66	13	7	10	250	154	....	....	....
1857	97	81	47	15	7	12	251	170	....	....	....
1858	76	77	34	20	5	18	246	169	....	....	....
1859	98	85	31	22	18	14	267	182	....	....	....
1860	85	83	38	16	12	17	267	184	94	88	182
1861	106	94	34	34	10	16	290	196	90	100	190
1862	86	94	42	32	7	13	282	188	88.7	105.7	191.4
1863	101	85	30	32	17	16	289	204	87.4	105.9	193.3
1864	105	92	36	16	17	23	309	217	99.4	107.4	206.8
1865	107	102	42	23	14	22	324	223	102.5	115.9	218.4
1866	104	91	26	28	16	21	327	236	106.3	122.6	228.9
1867	117	107	39	24	27	17	353	246	119.3	122.6	241.9
1868	118	129	51	39	18	21	364	235	118.5	121.27	239.77
1869	95	93	42	20	9	22	330	237	113.7	129.9	243.6
1870	130	114	37	34	20	23	367	253	123.1	125.9	249
1871	135	163	65	37	29	32	388	225	119.8	123.44	242.82
1872	152	123	55	31	16	21	377	254	109.36	125.19	234.55
1873	194	172	61	51	27	33	448	276	127.8	139.5	267.3
1874	140	137	42	44	27	22	416	281	140.4	127.5	267.9
1875	120	140	53	37	30	20	401	261	136.6	138.1	274.7
1876	140	122	35	34	27	26	401	279	121.4	139.1	260.5
1877	119	118	36	38	27	17	398	280	124.2	150.3	274.5
1878	114	118	35	36	30	17	394	276	128.9	143.8	272.7
1879	73	81	27	23	8	23	349	268	126.3	143.8	270.1
1880	111	94	28	27	22	17	379	285	127.4	147.6	275
1881	134	117	33	39	23	22	419	302	133.3	158.6	291.9
1882	104	121	38	26	27	30	406	285	131	159.1	290.1
1883	133	123	41	23	34	25	418	295	120.3	164.1	284.4
1884	141	127	18	41	44	24	436	309	124.3	169.5	293.8
1885	138	122	30	20	36	36	447	322	128.3	181.9	310.2
1886	138	143	43	30	34	34	460	317	139.82	182.37	322.19
1887	143	128	32	28	28	33	460	328	137.22	184.12	321.34

FORTY-FIFTH

ANNUAL REPORT OF THE TREASURER.

To the Trustees of the New Hampshire Asylum for the Insane:

The treasurer respectfully submits the following statement of receipts and expenditures of the New Hampshire Asylum for the Insane from April 1, 1886, to March 31, 1887:

RECEIPTS.

Cash on hand April 1, 1886	$3,543.82
received for board of private patients	48,689.42
received for board of patients supported by towns	4,906.58
received from counties for board of patients	10,996.25
from state treasurer for board of criminal insane	2,962.10
from state treasurer for aid to indigent patients	6,000.00
from state treasurer for increase of asylum library	100.00
from J. B. Walker, financial agent, for aid to indigent patients, etc.	10,000.00
from sale of stock and other articles	2,031.74
	$89,229.91

EXPENDITURES.

For meats	$7,808.64
flour	2,201.30
butter and cheese	2,966.63
sugar and molasses	2,084.85
fish	1,513.25
coffee and tea	881.34
potatoes, other vegetables, and fruits .	1,621.45
all other articles of food . . .	2,433.70
furniture and furnishing goods . .	4,897.95
all articles furnished to patients (refunded)	2,721.98
fuel and lights	10,284.54
medical and surgical supplies . .	666.92
all services in the board and care of patients	22,190.89
ordinary repairs, renewals, and permanent improvements in buildings and premises	12,242.41
provender	1,010.86
all farming operations, including animals purchased, utensils, farming tools and carriages, farm labor, care of garden, grounds, and all outside work	5,540.06
stationery, printing, and increase of library	472.21
postage, express, and telegraph . .	594.70
overpayments for board (refunded) .	121.20
traveling expenses of trustees . .	178.60
public exercises, including Sunday services, week-day exercises, and all	

means to occupy the attention of patients	$728.04
miscellaneous unclassified items . .	1,068.96
Whole amount paid out . . .	$84,230.48
Balance carried to new account .	4,999.43
	$89,229.43

J. P. BANCROFT, *Treasurer.*

CONCORD, April 1, 1887.

I certify that I have examined the accounts of the treasurer of the New Hampshire Asylum for the Insane for the fiscal year ending March 31, 1887, and find them clearly and accurately kept. All money received is accounted for, and every item sustained by a proper voucher.

WM. G. PERRY, *Auditor.*

CONCORD, April 13, 1887.

TWENTY-FIRST ANNUAL

REPORT OF THE FINANCIAL AGENT.

To the Trustees of the New Hampshire Asylum for the Insane:

The financial agent respectfully presents this report of his receipts and expenditures during the asylum financial year ending March 31, 1887, and of the amounts and investments of the funds in his custody.

RECEIPTS.

Cash on hand April 1, 1886	$2,293.67
received of New Hampshire Savings Bank, from Contingent fund . .	850.00
received in payment of ten Manchester bonds	10,000.00
received for interest and dividends .	14,693.86
	$27,837.53

EXPENDITURES.

Cash paid J. P. Bancroft, treasurer, appropriation to indigent patients, etc.	$10,000.00
for insurance	747.44

Cash paid principal in part of loan at New Hampshire Savings Bank	$3,000.00
interest on said loan	640.50
four New Hampshire Trust Co. 6 per cent bonds and accrued interest	4,018.00
three Oregon Short Line Railroad 6 per cent bonds, accrued interest and commission	3,216.50
three Northern Pacific Railroad 6 per cent bonds, accrued interest and commission	3,487.50
annuity of Mrs. Sarah J. Wilson, salary of financial agent, safe rent, and sundry small expenses	960.13
Balance carried to new account	1,767.46
	$27,837.53

The following statement presents the amounts of the several permanent funds, at their par value, on the first day of April, 1887, and the manner of their investment:

ADAMS FUND.

(Gift of Isaac Adams, of Sandwich.)

10 shares Pittsburg, Fort Wayne & Chicago Railroad stock	$1,000.00
2 United States bonds	600.00
	$1,600.00

BURROUGHS FUND.

(Legacy of Rev. Charles Burroughs, D.D., of Portsmouth.)

1 St. Louis County bond	$1,000.00

CHANDLER FUND.

(Legacy of Abiel Chandler, of Walpole.)

25 shares Portland, Saco & Portsmouth Railroad stock	$2,500.00
37 shares Boston & Maine Railroad stock .	3,700.00
100 shares Chicago, Rock Island & Pacific Railroad stock	10,000.00
10 shares Michigan Central Railroad stock	1,000.00
10 shares Pittsburg, Fort Wayne & Chicago Railroad stock	1,000.00
3 shares National State Bank stock .	300.00
2 Chicago Water Loan bonds . .	2,000.00
3 Northern Pacific Railroad bonds . .	3,000.00
1 Concord bond	500.00
2 Michigan Central Railroad bonds .	2,000.00
1 New Hampshire registered bond .	200.00
2 Iowa Loan and Trust Company bonds .	600.00
2 Chicago, Burlington & Quincy Railroad bonds	2,000.00
1 Chicago & Northwestern Railroad bond	1,000.00
	$29,800.00

CONANT FUND.

(Gift of John Conant, of Jaffrey.)

4 Iowa Loan and Trust Company bonds .	$4,000.00
1 Boston & Albany Railroad bond . .	1,000.00
3 shares Boston & Maine Railroad stock .	300.00
2 shares Boston & Providence Railroad stock	200.00
1 share Boston Exchange Company stock .	500.00
	$6,000.00

FISK FUND.

(Legacy of Catharine Fisk, of Keene.)

This fund is held in trust by the State of New Hampshire, and amounted, June 1, 1886, to	$24,885.31

KENT FUND.

(Legacy of Moody Kent, of Pembroke.)

14 Maine bonds	$7,000.00
5 Eastern Railroad bonds . . .	5,000.00
13 Michigan Central Railroad bonds .	13,000.00
8 Chicago (River improvement) bonds .	8,000.00
9 Burlington & Missouri River Railroad bonds	9,000.00
19 Chicago, Burlington & Quincy Railroad bonds	19,000.00
1 Chicago & Northwestern Railroad bond	1,000.00
6 Cleveland bonds	6,000.00
17 Concord bonds	17,000.00
3 Minneapolis bonds	3,000.00
3 United States bonds	1,200.00
7 Philadelphia, Wilmington & Baltimore Railroad bonds	7,000.00
10 Boston & Lowell Railroad bonds . .	10,000.00
5 St. Louis bonds	5,000.00
50 shares Pittsburg, Fort Wayne & Chicago Railroad stock	5,000.00
32 shares Northern Railroad stock . .	3,200.00
100 shares Michigan Central Railroad stock	10,000.00
2 shares Boston & Providence Railroad stock	200.00
50 shares Union Pacific Railroad stock .	5,000.00
50 shares Fitchburg National Bank stock	5,000.00

47 shares State National Bank stock .	$4,700.00
7 shares Railroad National Bank stock .	700.00
10 shares Boston Exchange Comp'y stock	5,000.00
	$150,000.00

KIMBALL FUND.

(Legacy of Jacob Kimball, of Hampstead.)

The Kimball fund is held in trust by the State, and the interest is annually paid to the asylum	$6,753.49

PENHALLOW FUND.

(Legacy of H. Louise Penhallow, of Portsmouth.)

1 Boston & Lowell Railroad bond . .	$1,000.00

RICE FUND.

(Legacy of Arabella Rice, of Portsmouth.)

3 Oregon Short Line Railroad bonds . .	$3,000.00
4 New Hampshire Trust Company bonds .	4,000.00
1 United States registered bond . . .	5,000.00
5 St. Louis bonds	5,000.00
3 Northern Pacific Railroad bonds . .	3,000.00
	$20,000.00

RUMFORD FUND.

(Legacy of the Countess of Rumford, of Concord.)

5 Philadelphia, Wilmington & Baltimore Railroad bonds	$5,000.00
5 Burlington & Missouri River Railroad bonds	5,000.00

30 shares Pittsburg, Fort Wayne & Chicago Railroad stock	$3,000.00
20 shares of Boston & Providence Railroad stock	2,000.00
	$15,000.00

SHERMAN FUND.

(Legacy of Mrs. Fanny S. Sherman, of Exeter.)

3 St. Louis bonds	$3,000.00
1 St. Louis County bond	1,000.00
1 Boston & Lowell Railroad bond . .	1,000.00
	$5,000.00

SPALDING FUND.

(Legacy of Isaac Spalding, of Nashua.)

10 Cleveland bonds	$10,000.00

CONTINGENT FUND.

This is not a permanent fund, but varies in amount from year to year, and is deposited in the New Hampshire Savings Bank in Concord. It amounted on the 1st of April, 1887, to	$289.92

The following is a summary of the names and amounts of the aforesaid funds of the asylum, viz.:

Adams fund	$1,600.00
Burroughs fund	1,000.00
Chandler fund	29,800.00
Conant fund	6,000.00
Fisk fund	24,885.31

Kent fund	$150,000.00
Kimball fund	6,753.49
Penhallow fund	1,000.00
Rice fund	20,000.00
Rumford fund	15,000.00
Sherman fund	5,000.00
Spalding fund	10,000.00
Contingent fund	289.92
	$271,328.72

The trust accepted by the State in 1844, when it assumed the custody of the Fisk fund, expires by limitation the present year. I would suggest for your consideration the advisability of asking of the Legislature a continuance of this trust by the State as heretofore, and that hereafter the annual income of this fund be paid to the asylum for current use.

In accordance with the vote of the board at its semiannual meeting in November last, the amount of insurance upon the asylum buildings has been largely reduced. It will be further reduced, upon the expiration of the policies expiring next July, to the amount fixed by this vote. It now amounts to eighty thousand one hundred dollars, and is distributed as follows, viz.:

Center and Chapel buildings	$20,000.00
Chandler wing and old cottage	10,000.00
Rumford wing	8,000.00
Bancroft building	9,000.00
Kent building	9,000.00
Peaslee building	5,000.00
Furniture	2,700.00
Coal-shed and coal	1,500.00
Boiler-house and machinery	5,000.00
Granary and contents	1,000.00

Horses, carriages, etc.	$1,000.00
Laundry	2,700.00
Barns, stables, and contents	5,200.00
Whole amount	$80,100.00

Most of the companies carrying our insurance are stronger than they were a year ago. Its reduction in amount has allowed the discontinuance of a considerable number of the policies heretofore held and issued by companies located at great distances outside the State. No further trouble is anticipated in procuring all the insurance needed by the asylum in reliable companies.

The debt incurred in the erection of the Bancroft building has been reduced to eleven thousand dollars, and the interest thereon has been paid to January 1, 1887. It is hoped that during the ensuing year the resources of the asylum will permit the completion of such of the permanent funds as have not yet attained their respective limits.

Respectfully submitted.

J. B. WALKER,
Financial Agent.

CONCORD, N. H., April 1, 1887.

Products of the Farm and Garden at Market Value, for the Year 1886.

Onions	139 bushels,	@ $0.75	$104.25
Peas	73 "	.80	58.40
Shell-beans	9 "	.85	7.65
Beets for table	90 "	.50	45.00
Beets for cattle	335 "	.20	67.00
Parsnips	25 "	1.00	25.00
Tomatoes	100 "	.75	75.00
Cucumbers	65 "	.75	48.75
Sweet corn	115 "	1.00	115.00
Asparagus	230 bunches	.12	27.90
Cabbage	160 heads	.06	9.60
Potatoes	1,165 bushels	.50	582.50
Oats	57 "	.45	25.67
Hay	95 tons	18.00	1,710.00
Corn fodder	45 "	7.00	315.00
Oat straw	3 "	12.00	36.00
Squash	3 "	50.00	150.00
Turnips	80 bushels	.40	32.00
Pork for use	6,200 pounds	.06½	403.00
Pigs sold	20	3.00	60.00
Pork sold	3,692 pounds	.06½	239.85
Calves sold	25	2.00	50.00
Milk produced	79,752½ quarts	.05	3,987.62
Radishes	135 bunches	.10	13.50
Lettuce	90 dozen	.50	45.00
Str. Tomatoes	8 bushels	.75	6.00
Summer squash	18 "	1.00	18.00
Total			$8,257.69

Amount of Milk Produced for the Year beginning April 1, 1886.

MONTHS. / COWS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Total Daily Average.
April	7	12½	4¾	8	D.	8¾	9	8	9½	13½	7	10¼	12¼	D.	D.	4½	8¾	8¾	10½	D.	8¾	8½	7¼	D.	8	D.	7	5¼	7½	7	4 B.	13 B.	17 B.	24 B.	21 B.	29 B.	B.	1	R.	R.	201¾
May	7½	14	5¼	7½	D.	10	10	8½	8½	14½	7¾	13¾	9	15	D.	5	10½	10¾	10	D.	8	8½	5	D.	8¼	D.	7½	6	7½	7½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	225
June	8¾	11½	3¼	8½	12	8	9¼	6¾	8½	13¼	6¼	11	9¼	14	14½	D.	7¾	6½	12¾	13	S.	6¾	D.	11½	8	12¾	5¾	3¾	7¼	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	246¾
July	7	11	D.	7½	11¼	6½	7¼	5½	7¼	9¾	4	9½	7½	12	12	D.	8½	3½	9½	13	S.	4	D.	11½	6	11½	4½	1	5¾	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	202¾
August	7	12	D.	S.	11½	7¾	9¼	3½	7¼	11¼	1½	10¾	S.	11½	13¾	14	9	1½	11	13¼	S.	2¾	D.	10¾	5¾	10¾	4½	D.	7	6¾	10	11	.....	.....	.....	.....	.....	.....	.....	.....	225
September	6	8½	D.	S.	9½	5	5¼	3	5¾	7¼	D.	6¾	S.	11½	9½	11½	8	D.	6¾	10	S.	2	12	S.	4	8½	2¼	D.	6	4	9¼	10½	.....	.....	.....	.....	.....	.....	.....	.....	173
October	3½	8¼	9¾	S.	10	3¾	6¼	1¼	5¾	6	D.	7	S.	9½	9¾	10	7½	D.	3	8	S.	D.	10¼	S.	2¼	7¼	1½	D.	4½	2	9	9½	13¾	8¾	.....	.....	.....	.....	.....	.....	177¾
November	S.	6¼	7½	S.	9	2¼	6	D.	5¾	5¾	D.	6½	S.	8½	12¾	8¾	S.	D.	1½	9	S.	D.	9	S.	D.	8¾	D.	10½	S.	1¼	7½	9½	13	9	13½	11¼	.....	.....	.....	.....	183
December	S.	5½	7½	S.	8½	D.	4¾	10	6½	2¼	11¾	2	S.	6¾	12	9½	S.	13	D.	5½	S.	16½	10	S.	13½	9	11½	8½	S.	D.	9	8	11¾	8¼	14	9	.....	.....	.....	.....	234¼
January	S.	4	7¾	S.	9¾	D.	4½	9¾	6½	2	14¼	D.	S.	3¼	11¾	10¼	S.	13¼	D.	9½	S.	16¼	9¾	S.	10¼	8	12	8	S.	D.	8½	9	12¾	9	12¾	10½	13½	10¼	.....	.....	256¾
February	S.	1¼	7	S.	8	D.	3	8	4¼	D.	15¼	13½	S.	D.	10¼	9¼	S.	11½	14½	8	S.	14	9	S.	12½	4	11	7	S.	10½	8½	8	12	7½	12	10	11¼	9¾	.....	.....	260¾
March	S.	D.	6¾	S.	S.	14½	1	6	S.	Died	12	13	S.	D.	4	7	S.	9	12½	6	S.	11	7¾	S.	10½	D.	10½	6	S.	8¾	7	7	10	7	10	8½	9¼	8½	10	11	234¾
																																									2,621¾ qts.

Daily average for year ending March 31, 1887..................................218½ quarts.
Amount produced during the year...... ....79,752½ quarts, at 5cts. — $3,987.62.

S. — Sold. D. — Dry. R. — Raised. B. — Bought.

Work done in Sewing-room for the year ending March 31, 1887.

Sheets	308
Pillow-cases	379
Bed-spreads	20
Comfortables	33
Quilts	3
Mattresses	12
Quilted blankets	4
Pillow-ticks	15
Table-cloths	44
Napkins	48
Stand-spreads	18
Towels	440
Curtains.	117
Lambrequins	13
Carpets	19
Rugs	25
Hassocks	3
Chairs covered	19
Lounges covered	5
Chairs caned	4
Dresses	154
Skirts	10
Waists	8
Sacques	10
Aprons	32
Shirts	74
Pants	4
Coats	2
Men's combination suits	19
Mending, etc.	198 days.
Horse-blankets	4
Carriage-dusters	4

Work done in Kitchen for the year ending March 31, 1887.

Canned tomatoes	125	quarts.
Jelly	300	glasses.
Canned fruit	225	quarts.
Catsup	65	gallons.
Sweet pickle	70	"
Pickled cucumbers	256	"
Mince-meat	75	"
Marmalade	15	"
Piccalilli	20	"

APPENDIX.

APPENDIX.

DIRECTIONS CONCERNING ADMISSION.

Those wishing the admission of a person to the asylum should make application to the superintendent previously to bringing the patient, unless the urgency of the case precludes it.

On application, full information as to terms, conditions, etc., and the necessary papers, will be furnished.

With the application a brief statement of the case should be given.

Some person should accompany the patient who can give a correct history of the case if possible.

On no account should deception be practised. The necessity of this step and the arrangements having first been settled, the patient should be honestly informed of what is to take place.

When possible, it is better that patients should arrive in day trains.

Patients should not bring valuable property when committed, and the asylum cannot become responsible for its keeping. Such articles should be left at home, unless the patient is fully responsible for their care.

The parties committing a patient, whether private individuals or town officers, are required to give a bond for the payment of expenses in the annexed form, signed by two responsible persons. The certificates of physicians should be filled and signed in all cases, except those committed by courts, and be written in the annexed form.

FORM OF BOND.

In consideration of the admission of , of the town of , in the county of and State of , as a boarder at the New Hampshire Asylum for the Insane, in the city of Concord, we, , of the town of , in the county of and State of , and , of the town of , in the county of and State of , jointly and severally promise and agree to and with the said New Hampshire Asylum for the Insane, to pay its treasurer dollars and cents per week, or such other rate as may from time to time be established by said asylum therefor, while he shall remain at said asylum; together with such extra charge as may be occasioned by requiring more than the ordinary care and attention; to pay any reasonable charge for actual damage done by to buildings or furnishings; to assist in returning to said asylum in case of elopement; to remove from said asylum when required to do so by the superintendent; to pay funeral charges in case of death; and not to hold said asylum responsible for any money, jewelry, watches, or other valuables in possession on admission, or given to afterwards.

Payments to be made quarterly, and interest on all sums not paid at the end of each quarter.

Witness our hands, this day of , 188 .

Attest: *Principal.* [L. S.]
Surety. [L. S.]

NOTE. — Those committing patients are requested to notice the condition in regard to money, jewelry, etc.

FORM OF PETITION.

[To be filled and signed by those desiring aid from the state appropriation, to be sent to the superintendent.]

To His Excellency the Governor of the State of New Hampshire:

Respectfully represents that , an insane person, resident of in this State, is without sufficient property or relatives legally liable for support at the New Hampshire Asylum for the Insane. Wherefore the undersigned prays that the said be aided by any funds appropriated by the State for the indigent insane.

Dated at , , 188 .

We, the undersigned, selectmen of , hereby certify that the representations in the above petition are in our belief true, and that said is an indigent insane person.

N. B. Please write whether the insane person has any property, and, if so, what amount, and any other facts you may think proper in relation to the ability of the insane person's near relatives.

NOTE. — The amount received by the applicant, it will be understood, is regulated entirely by the number who may apply for aid, and the comparative need of assistance.

ORDER FOR SUPPORT OF TOWN AND COUNTY PATIENTS.

We, , hereby order the committal of to the New Hampshire Asylum for the Insane, at Concord, there to be supported at the expense of , in accordance with the statute, during residence at said asylum.

——— ———
——— ———

——— ——— 18 .

——— ———

NOTE. — To be signed by mayor, selectmen, or overseer of poor in case of town charge; by county commissioner in case of county charge.

[N. B. — Admission will be refused unless the requirements of the law are strictly complied with. See extracts from the Laws at foot of this blank.]

FORM OF CERTIFICATE OF INSANITY.

REQUIRED FOR ADMISSION OF PATIENTS.

After due inquiry and personal examination of , of , made within one week prior to date, we certify that is insane, and a fit subject for treatment at the New Hampshire Asylum for the Insane.

——— ———, M. D.
——— ———, M. D.

———, ———, 188 .

Having personal acquaintance with the signers of the above certificate, I certify that the signatures are genuine and the signers reputable physicians.

———, ———, 188 .

——— ———
——— ———

EXTRACT FROM THE LAWS OF NEW HAMPSHIRE.

SECTION 18. No person shall be committed to the asylum for the insane, except by the order of the court or the judge of probate, without the certificate of two reputable physicians that such person is insane, given after a personal examination made within one week of the committal; and such certificate shall be accompanied by a certificate from a judge of the supreme court, or court of probate, or mayor, or chairman of the selectmen, testifying to the genuineness of the signatures and the respectability of the signers.

LAWS

Relating to the New Hampshire Asylum for the Insane.

Section
1. Corporate name of the asylum.
2. Trustees, how appointed.
3. Tenure of office of the trustees.
4. Trustees to manage the affairs of the asylum.
5. To appoint officers, etc.
6. Trustees not to receive compensation.
7. To make regulations.
8. May hold property in trust; no land taken for public use except by authority of the Legislature.
9. Shall make report annually.
10. Board of visitors and their duties.
11. Secretary to cause report to be printed and distributed.
12. Persons dangerous to be at large may be committed to the asylum.
13. Insane persons confined in jail may be committed.
14. Insane paupers, how committed by town.
15. Insane county paupers may be committed by supreme court.

Section
16. Support of insane committed by court.
17. Parents, guardians, etc., may commit; Concord not to be liable.
18. Certificate of two physicians required to commit.
19. When county shall support insane person.
20. Means of support failing, county liable after notice.
21. County may recover expense paid.
22. How discharged from asylum.
23. Trustees to visit asylum and hear statements of patients.
24. Superintendent to furnish stationery, and transmit letters to trustees.
25. Inquest on patients suddenly deceased.
26. Property of asylum exempt from taxation.
27. Governor may remove insane convicts from state prison to asylum.
28. Annual appropriation for indigent insane and for library.

Section 1. The asylum for the insane, at Concord, is a corporation under the name of the New Hampshire Asylum for the Insane.

Sect. 2. The government of the asylum is vested in twelve trustees, appointed and commissioned by the Governor, with advice of the Council; and all vacancies shall be filled in the same manner.

SECT. 3. The trustees are classified and commissioned in such a manner that the offices of three trustees become vacant annually.

SECT. 4. The trustees shall take charge of the property and the concerns of the asylum; shall see that its affairs are conducted properly; may enter into and bind the asylum by such contracts relative to the support of patients and the affairs of the asylum as they may deem advantageous; and may receive, appropriate, control, convey, or invest any property given to or owned by the asylum in such manner as they may think expedient.

SECT. 5. The trustees shall appoint a secretary, who shall keep a full and fair record of their proceedings; a treasurer, who shall give bond for the faithful discharge of his duty; and such physicians, officers, and assistants, with such salaries and allowances, as may from time to time be found necessary.

SECT. 6. No trustee shall receive any compensation for his services as trustee, but expenses necessarily incurred by him shall be paid by the asylum.

SECT. 7. The trustees may make such regulations for their own government, for the management of the asylum and all persons connected therewith, and for the admission and care of patients, and the same from time to time alter, as convenience may require.

SECT. 8. The trustees may take and hold in trust for the asylum any grant or devise of real estate, or any donation or bequest of personal property, and may apply the same, unless otherwise restricted, to lessen the expenses of the indigent insane. No land connected with the asylum shall be taken for a highway or other public use, except by the express authority of the Legislature for that purpose first had and obtained.

SECT. 9. The trustees shall make to the Governor and Council, annually, a report covering that of the superintendent to them, of the receipts and expenditures of the asylum, the number of patients admitted and discharged during each year, and all other matters connected with the general interests of the asylum, which shall be furnished to the secretary of state on or before the twentieth day of April.

SECT. 10. The Governor and Council, president of the Senate, and speaker of the House shall constitute a board of visitors of the asylum; shall visit and inspect the same when necessary; examine into the condition of the patients, and the regulations and general management of the asylum; see that the design thereof is carried into full effect; and make to the Legislature, biennially, a report, which shall be furnished to the secretary of state on or before the twentieth of April next before the June session.

SECT. 11. The secretary shall cause fifteen hundred copies of the reports of the superintendent, trustees, and board of visitors of the asylum to be printed and distributed, — one copy each to the Governor, members of the Council, Senate, and House, and their officers; one copy to the clerk of each town; and the remaining copies to be placed in the hands of the board of visitors for distribution, as they shall order and direct.

SECT. 12. If any insane person is in such condition as to render it dangerous that he should be at large, the judge of probate, upon petition by any person, and such notice to the selectmen of the town in which such insane person is, or to his guardian, or any other person, as he may order, — which petition may be filed, notice issued, and a hearing had in vacation or otherwise, — may commit such insane person to the asylum.

SECT. 13. If any insane person is confined in any jail, the supreme court may order him to be committed to the asylum, if they think it expedient.

SECT. 14. Any insane pauper, supported by any town, may be committed to the asylum by order of the overseers of the poor, and there supported at the expense of such town; and such expense may be recovered by such town of the county, town, or person chargeable with the support of such pauper, in the same manner as if he had been supported in and by the town.

Sect. 15. If the overseers neglect to make such order in relation to any insane county pauper, the supreme court, or any two judges thereof in vacation, may order such pauper to be committed to the asylum, and there supported at the expense of the county.

Sect. 16. Any insane person committed to the asylum by order of the supreme court, such person having been charged with an offence the punishment whereof as prescribed by law is death or confinement in the state prison, shall, during his confinement in the asylum for the insane, be supported therein at the expense of the State. Any insane person committed to the asylum by any court, except as herein provided, or by any judge of probate, shall be supported by the county from which he was committed.

Sect. 17. The parent, guardian, or friends of any insane person may cause him to be committed to the asylum, with the consent of the trustees, and there supported on such terms as they may agree; but the city of Concord shall not, in any case, be liable for the support or maintenance of any person committed to said asylum, except from said city.

Sect. 18. No person shall be committed to the asylum for the insane, except by the order of the court or the judge of probate, without the certificate of two reputable physicians that such person is insane, given after a personal examination made within one week of the committal; and such certificate shall be accompanied by a certificate from a judge of the supreme court, or court of probate, or mayor, or chairman of the selectmen, testifying to the genuineness of the signatures and the respectability of the signers.

SECT. 19. Any insane person committed to the asylum by his parent, guardian, or friends, who has no means of support, and no relatives of sufficient ability chargeable therewith, and no settlement in any town in this State, and who is in such condition that his discharge therefrom would be improper or unsafe, shall be supported by the county from which he was committed.

SECT. 20. When the means of support of any inmate of the asylum shall fail or be withdrawn, the superintendent of said asylum shall immediately cause notice in writing of that fact to be given to one of the county commissioners of the county from which such inmate was committed; and such county shall be liable and holden to pay to said asylum the expense of the support of such inmate from and after the service of such notice, and for ninety days next prior thereto.

SECT. 21. The county paying the expense of the support of any inmate shall be entitled to recover the amount so paid of any town, county, or individual by law liable for the support of such inmate.

SECT. 22. Any person committed to the asylum may be discharged by any three of the trustees, or by any justice of the supreme court, whenever the cause of commitment ceases, or a further residence at the asylum is, in their opinion, not necessary; but any person so discharged, who was under sentence of imprisonment at the time of his commitment the period of which shall not have expired, shall be remanded to prison.

SECT. 23. Some one of the board of trustees of the asylum shall, without previous notice, visit that institution at least twice every month, and give suitable opportunity to every patient therein, who may desire it, to make to him, in private, any statements such patient may wish to make; and whenever in his opinion it may be deemed proper, he shall call to his aid two other members of said board, who shall with him make a further examination of such patient, and of the statements by him made. If in their view the cause of commitment no longer exists, or a further residence at the asylum is not necessary, it shall be their duty to discharge such patient. Should they deem the treatment of any patient injudicious, they shall order such an immediate change of the same as to them seems proper; and, in case of failure to secure it, they shall at once summon a meeting of the whole board, whose duty it shall be to take such measures as the exigency of the case demands.

Sect. 24. It shall be the duty of the superintendent to furnish stationery to any patient who may desire it, and transmit any letter such patient may address to the board of trustees, to such member as said board shall have designated to receive such correspondence, and all such letters shall be promptly transmitted without inspection.

Sect. 25. In event of the sudden death of any patient in the asylum, a coroner's inquest shall be held, as provided for by law in other cases.

Sect. 26. The property of the asylum is exempted from taxation.

Sect. 27. The Governor, with advice of the Council, may remove to the asylum, to be there kept at the expense of the State, any person confined in the state prison who is insane.

Sect. 28. The sum of six thousand dollars is annually appropriated for the maintenance of indigent insane persons belonging to this State at the asylum, for such and so many as the Governor may from time to time approve, not less than two thirds of which sum shall be applied annually to the support of private patients, exclusive of paupers maintained at public charge; and the sum of one hundred dollars is annually appropriated toward the support and increase of the library for the insane. — *General Laws of New Hampshire, pages* 60–63.

The following persons are also exempted from military duty:

. . . .

the attendants upon the insane, employed in the asylum for the insane;

. . . .

the officers and keepers of the asylum for the insane. — *General Laws of New Hampshire, page* 229, *section* 4.

An act authorizing Timothy Hall, administrator of the estate of Catharine Fisk, deceased, to sell the real estate of said deceased.

SECTION 1. *Be it enacted by the Senate and House of Representatives in General Court convened:* That the judge of probate for the county of Cheshire is hereby authorized, upon petition for that purpose, and notice as in other cases for license to sell real estate, to grant a license to the administrator of the estate of Catharine Fisk, late of Keene, in the county of Cheshire, deceased, with the will annexed, to sell and convey the real estate of which the said Catharine Fisk died seized; and such sale may be made subject to the annuity of which it is charged by the terms of said will; or in case the estate cannot, in the opinion of the said administrator, be sold to advantage in that mode, the said administrator may be authorized by the said judge of probate to sell and convey the said estate to any purchaser, and, in behalf of the State, to warrant the same against the said annuity, in which case the State shall assume and be responsible for the payment of the annuity aforesaid; and it shall be the duty of the treasurer to pay the same according to the terms of said will; *provided*, that the amount paid into the treasury shall not be less than four thousand and two hundred dollars.

SECT. 2. In case of a sale of said estate in either of the modes herein prescribed, the said administrator shall, within six months thereafter, make a settlement of his administration account in the court of probate for the county of Cheshire, in which settlement shall be included the proceeds of such sale; and shall thereupon pay to the treasurer of the State the balance which shall be found in his hands in such settlement, and the receipt of the treasurer shall be a good and valid discharge therefrom.

SECT. 3. Upon such payment, the State will become chargeable for the payment of any legacies which, by the terms of said will, may arise and become payable after the said annuity may cease.

SECT. 4. The title of any purchaser of said real estate, arising by virtue of this act, is hereby guarantied and confirmed.

SECT. 5. It shall be the duty of the treasurer to open and keep an account of all receipts and payments made by virtue of this act.

[Approved December 28, 1844.]

An act concerning the fund left by Catharine Fisk for the benefit of the New Hampshire Asylum for the Insane.

SECTION 1. *Be it enacted by the Senate and House of Representatives in General Court convened:* That it shall be the duty of the treasurer, in keeping an account of said fund, to credit the same from year to year with the interest thereon, from the time of its payment into the treasury, and to charge the said fund with all payments made in pursuance of an act in relation to the same passed December 28, 1844.

[Approved June 18, 1852.]

BY-LAWS

OF THE NEW HAMPSHIRE ASYLUM FOR THE INSANE, ADOPTED BY THE TRUSTEES AT A MEETING OF THEIR BOARD HOLDEN OCTOBER 31, 1878.

SECTION 1. The annual meeting of the board of trustees shall be holden at the asylum, in Concord, on the Thursday next preceding the twentieth day of April of each year, and a semi-annual meeting shall be held on the second Thursday of November of each year.

SECT. 2. The trustees shall at the annual meeting elect, by ballot, a president, secretary, and treasurer, who shall hold their respective offices one year, and until others are chosen in their stead. At times, when either of said offices is vacant, it may be filled at a special meeting of the trustees duly called for that purpose.

SECT. 3. Notice of the annual and semi-annual meetings shall be given by the secretary to each trustee, either verbally or by mail, at least fourteen days previous to the day of meeting; and any meeting may be continued by adjournment, from time to time, until the business thereof shall be completed. In case of omission to notify the annual meeting, the same shall not be lost, but shall be considered as adjourned for the transaction of business, until the required notice thereof shall be given, which the secretary shall forthwith proceed to give.

SECT. 4. The president, or any four of the trustees, may call a special meeting of the trustees whenever in the opinion of either it may be deemed expedient so to do; and the same notice shall be given of a special as of the annual meeting, which notice shall state specifically the business to be brought before such meeting. In case of a vacancy in the office of secretary, the president shall notify the annual meeting.

SECT. 5. A majority of the members of the board shall constitute a quorum for the transaction of any business; but any less number, at a meeting duly called, may adjourn from time to time until a quorum be obtained.

SECT. 6. Two of the trustees shall visit the asylum each month; and notices of the months by him selected, or to him assigned, shall be sent to each member by the superintendent before the first day of such month.

SECT. 7. No trustee shall receive any compensation for his services as trustee; but expenses necessarily incurred in rendering the same shall be paid by the asylum.

SECT. 8. The trustees shall, at each annual meeting, appoint from their number an auditor, whose duty it shall be to examine the books and audit the accounts of the treasurer and of the financial agent for the ensuing year, and make a written report to the board.

SECT. 9. The treasurer shall give a bond, acceptable to the trustees, in the penal sum of fifteen thousand dollars, for the faithful performance of his duties for and during such time as he shall continue to hold the office of treasurer, which bond shall be deposited with the president of the board.

SECT. 10. The treasurer shall receive, hold, and disburse all moneys coming to the asylum, except the permanent funds and the income thereof. He shall make an exhibit of the state of his books, and of the property in his custody, when called for by the trustees. He shall make up his accounts to the thirty-first day of March inclusive in each year, which accounts, with his report thereon, shall be laid before the trustees at their annual meeting. His books shall at all times be open to the examination of the trustees.

SECT. 11. The treasurer shall pay all bills approved by the superintendent, and, in addition thereto, such orders as the superintendent may draw on him for the ordinary expenditures of the asylum, when said offices are held by different individuals.

SECT. 12. The treasurer shall receive such compensation for his services as the trustees may from time to time determine.

SECT. 13. The secretary shall attend all meetings of the board of trustees, and keep a record of their proceedings. He shall also prepare, or cause to be prepared, all documents, statements, and notices which may be ordered by the board, or by the president thereof.

SECT. 14. The secretary shall receive such compensation for his services as the trustees may from time to time determine.

SECT. 15. The board of trustees shall appoint a superintendent, who shall be a physician, and shall reside at the asylum. He shall have the entire control of the treatment and management of the patients; the power to appoint and discharge all persons employed in their care; and shall exercise a general supervision and direction of every department of the institution.

SECT. 16. The superintendent shall make a written report to the trustees, at their annual meeting, of the condition of the asylum, and embracing such other topics as may have been suggested by the progress of the institution and the experiences of the year.

SECT. 17. The superintendent shall receive for his services, in addition to furnished apartments, board, lights, and fuel for himself and family, such a salary as the trustees may from time to time determine.

SECT. 18. The superintendent shall furnish, to the acceptance of the trustees, a bond for the faithful performance of his duties, in the penal sum of ten thousand dollars, which bond shall be kept by the president of the asylum.

Sect. 19. The superintendent shall appoint two assistant physicians, who shall reside at the asylum. They shall possess such characters and qualifications as will enable them to discharge the ordinary duties of the superintendent, and shall at all times perform such duties as he may assign them, and to his acceptance.

Sect. 20. The assistant physicians shall receive such compensation for their services as the trustees may from time to time determine, in addition to furnished apartments, lights, fuel, and board.

Sect. 21. All funds, amounting to one hundred dollars and upwards, which have heretofore been or which may hereafter be given to the New Hampshire Asylum for the Insane, shall, unless otherwise ordered by the donors, be entered upon the books of the financial agent as permanent funds, with the surnames of the donors attached to each, and be forever kept intact. The income of each shall be expended from time to time in accordance with the conditions upon which it was given, or, in the absence of conditions, in such manner as the trustees shall deem to be for the highest interest of the asylum and its patients.

Sect. 22. There shall be chosen, by ballot, a financial agent, who shall have charge of the permanent funds of the asylum, shall collect, and, under the advice of the finance committee, from time to time invest, manage, and disburse any moneys arising therefrom. He shall be, *ex officio*, a member of the finance committee, shall give a satisfactory bond for the faithful performance of his trust in the penal sum of twenty-five thousand dollars, and continue in office until his successor is elected. He shall receive for his services such compensation as the trustees shall from time to time determine.

SECT. 23. The trustees shall annually choose two from their board, who, with the financial agent, shall constitute a finance committee, and have general supervision and control of the permanent funds of the asylum, with power to sell and transfer any stocks, bonds, and other securities belonging to said funds whenever, in their judgment, it may be expedient so to do.

SECT. 24. Besides attending the annual meeting, the trustees shall severally visit the asylum twice each year, in such months as they may select, or as may be assigned to them; make a thorough examination of the house and of the condition of the patients; and, before leaving, make a record of their respective visits in a book to be kept at the asylum for that purpose.

SECT. 25. These By-laws may be altered or amended at any annual meeting by a vote of two thirds of the trustees present, or at a special meeting called for that purpose.

SERVICE MANUAL.

A strict observance of the following rules is the established condition of all contracts for service with the New Hampshire Asylum for the Insane; and any applicant for a position not willing to observe them strictly will do better to seek employment elsewhere.

1. Any employé wishing to leave the premises to go into the city or elsewhere must apply at the office, that such absence may be understood; and all must be at the asylum at 9.30 o'clock in the evening, unless away later by permission.

2. It is expected that all persons employed will consider that, on the conditions of their respective contracts, they have engaged their time and best services to the asylum; that it is inconsistent with their duties to hold any political office; that they are under obligations to do every duty assigned them, promptly and faithfully; that they will feel personally interested in the good care, safety, and welfare of the patients; and that they will give their personal influence in support of good order and the established regulations of the institution. To this end it is most desirable that all should cultivate quiet, kind, and dignified manners and correct habits in all things, considering always that this is no less for the interest of the employé than for that of the employer.

3. Those proposing to discontinue their services will give at least thirty days' notice, that time may be given to supply their places.

4. That the house may be quiet, it is expected that all will be at their own rooms after 9.30 o'clock in the evening, at which time the house is closed for the night. After this time the quiet of the house must not be disturbed by passing and conversation. All must bear in mind that the repose of the patients is a thing of prime importance. All having duties must rise at the morning bell and proceed to the performance of the same.

5. No light must be carried about the buildings except in a lantern, and the greatest care must be taken in the use of matches that none be left exposed. A little carlessness in this thing might be followed with the most serious consequences. No smoking will be allowed on the asylum premises, except in the smoking-room provided for that purpose.

6. No one will invite visitors to stop in the house without permission to do so; but on application, all reasonable privileges will be granted.

7. No one shall employ a patient to do private work for himself or herself without the consent of the superintendent, assistant superintendent, or other officer authorized to give such permission; and no one is allowed to trade or make bargains with patients.

8. Provision is made to afford each person employed a vacation of two weeks in the year, during which time the duties of the position will be done by a substitute; but the superintendent does not guarantee to retain the place of any one for a longer term of absence. On leaving for a vacation, or permanently, every one will deliver his or her keys at the office.

9. Whenever patients are encouraged to engage in any kind of labor, it is with a view to their own benefit; and hence no one will be taken from the halls for that purpose unless some order to that effect has been given in the case.

10. The person taking patients to labor will be held

strictly responsible for their safety, kind care, and safe return to their respective halls.

11. All farmers or others to whom patients are intrusted for labor will remember that they are not to be treated as servants; they will avoid all appearance of commanding, and will exercise the greatest care that no willing one shall be made a drudge or work too long. It will be treated as a grave offence if any employé shall take advantage of the willingness or mental weakness of any patient to impose on such one the harder or more unpleasant parts of the work on which they are employed. The head farmer is required to see that this rule is obeyed in spirit and letter, and report promptly to the superintendent any violation of the same. As occupation is a thing of the greatest value to most patients, every employé is required to do all in his or her power to interest them in it in some form, and make it attractive.

12. As far as practicable, provision will be made to give each employé opportunity to be absent from duty for church services on Sunday a due proportion of the time; and any whose ordinary labor is wholly suspended on Sunday are liable to be called on to relieve others, whose duties continue, a portion of the time, and such must hold themselves in readiness to be so called on. It is expected that all employés, whose duties do not interfere, will be present at the regular Sunday service in the chapel.

STEWARD.

The steward will have the general oversight of the buildings, farm, stock, and premises. It will be his duty to attend to ordinary business transactions, and see that asylum property in every department is saved, kept in its proper place, protected from harm or waste, and properly used. He will see that everything about the premises is kept in good order, that the grounds near the house are kept clean, free from waste and rubbish, and will extend the same supervision to the basements and attics, and see that the person to whom it is assigned to care for these spaces discharges his duty faithfully. He will see that all animals are properly taken care of, and that carriages, tools, and implements are kept in repair, and stored in their places when not in use; and, generally, he will be responsible to the superintendent for the good condition of property and premises, and must properly notify him of anything adverse to the welfare of the asylum which comes to his knowledge. He will attend to procuring ordinary supplies for subsistence, except so far as otherwise provided for by the superintendent, and see that such goods are delivered and stored in their proper places. He will see that the house is closed and the doors locked at the appointed hour at night, and hold himself ready to discharge any special duty required by the superintendent.

CLERK.

It will be the duty of the clerk to keep the books and accounts in a neat and accurate manner, take systematic care of all papers connected therewith, and perform any special clerical work required by the superintendent.

HOUSEKEEPER.

SECTION 1. The housekeeper will have the general management of the internal domestic affairs. The labor in the kitchen, laundry, and sewing department will be done under her direction; and those employed in these departments will hold themselves subject to her orders in the discharge of their duties. She will attend to the good condition of all apartments connected with the general housekeeping, will see that they are properly furnished and kept in good order. She will see that all the work in her departments is done in accordance with the general instructions of the superintendent.

Sect. 2. She will have the care of all goods and material used in her department, and will see that they are saved and economically used; all bedding and articles manufactured for housekeeping purposes will be under her care, and she must see that they are not wasted or given out needlessly. She will have the care of the making of any clothing furnished to female patients, and will be required to keep an accurate account of the cost of such clothing or other articles furnished to any one. The cost of any articles furnished for patients must be returned by her to the supervisor, to be entered in the accounts of such patients.

Sect. 3. It is the duty of the housekeeper to report to the superintendent any instance of misconduct, failure in the proper discharge of duty, or violation of the established regulations occurring in her department, and not promptly rectified by the delinquent. It will also be her duty to report to the person who keeps the time-book the times of commencing and leaving duty of all employed in her department.

SUPERVISORS.

Section 1. The supervisors in their respective departments will have the general oversight of the halls and the patients; and the prudence and tact with which their duties are performed will be an important factor in the condition of the house. It is expected that they will see that the rules of the house relating to the patients are observed in every particular; that all patients are treated with uniform respect and kindness; and it is their imperative duty to report immediately to the superintendent or assistant superintendent any instance of neglect, incivility, or ill-usage of a patient, or any violation of the established rules.

SECT. 2. They will see that all medicines prescribed are faithfully and in a proper manner administered, and that all directions of the medical officers are strictly obeyed.

SECT. 3. They will be expected to pass as much time in the halls as the proper discharge of other duties will allow, will instruct new attendants in their duties, and as much as possible assist in efforts to interest and employ the patients.

SECT. 4. The supervisors must see that the dining-rooms are furnished with the necessary utensils, that the attendants take proper care of the dining-rooms, that the cupboards are sweet and in order, the tables neatly set, and the meals properly served.

SECT. 5. They will have the general charge of the clothing of the patients, and an oversight of the beds and bedding of the halls. The attendants must report to them any deficiency in either which may exist, and it is their duty to see that such wants are supplied.

SECT. 6. On the admission of patients, their clothing will be taken in charge by the supervisors, entered in the book provided for the purpose, and each article plainly marked. All articles afterwards furnished or received will be cared for in the same manner.

The clothing of patients leaving must be compared with the record, neatly packed, and delivered at the office by the appropriate supervisor.

Any knives, razors, or other dangerous article in possession of a patient on admission must be brought to the office for safe-keeping and record.

SECT. 7. They will pay special attention to the sick, report promptly at the office any change of symptoms, see that they have proper attention, and that any special diet prescribed is delicately prepared and served.

SECT. 8. After passing through the halls and learning the condition of the patients early in the morning, the supervisors will very briefly report to the physicians any sickness or other fact demanding attention before the morning visits.

SECT. 9. Before the Sunday chapel service, and other occasions of public gathering, the supervisors will see that the patients are properly dressed for the occasion, and accompanied to the chapel by their attendants.

SECT. 10. The supervisors will report to the clerk the times of commencing and leaving off work on the part of the attendants employed in their respective departments.

SECT. 11. In general, the supervisors are expected to hold themselves in readiness to carry into practical effect the instructions of the superintendent, and to use all their personal influence in support of the spirit and design of these regulations.

ATTENDANTS.

SECTION 1. In all their intercourse with the patients, the attendants are required to treat them with respect and civility, to be kind and gentle in manner, and avoid roughness of every kind. They must answer, as far as they can, the civil questions of a patient, and attend to every reasonable request. They must be calm and quiet under provocation, never scold, threaten, or recriminate, and make every request in a respectful manner.

SECT. 2. In the care of the insane, sympathy, kindness, and tact should take the place of force and display of authority. But if at any time the use of force becomes a necessity, the *manner* of using it should take away its offensiveness; *and force* should never be resorted to without the presence of sufficient assistance to render a violent struggle unnecessary.

SECT. 3. A cheerful look, a kind manner, a respectful demeanor, and expressions of sympathy will do much to quiet the excited, and give the attendant influence and easy control over patients, and render duty easy and agreeable.

SECT. 4. The opposition which the insane make often arises from delusions that lead them to believe they are to be injured in some way, and for this reason every effort to control them to administer food, medicine, or baths, or to do anything for them, should be made in the most kind and delicate manner, that their confidence may be secured and retained. On the other hand, cross words, angry looks, or violent acts destroy their confidence and diminish their chances of recovery. No one must risk the consequences of such measures.

SECT. 5. A blow or a kick is never to be inflicted on a patient by any employé under any circumstances. Any violation of this rule will be treated as a grave offence.

SECT. 6. Mechanical restraint must never be put on a patient without the authority of a medical officer.

SECT. 7. The attendant should be an example of good manners, avoiding all rude and ungentlemanly or unladylike habits not suited to the well-ordered household. They should treat each other and all with civility and politeness, cherish a high sense of obligation, and never forget the golden rule, to do by others as, in changed circumstances, one would wish to be done by. By this simple means the attendant is sure to gain not only self-respect, but an easy control and personal influence.

SECT. 8. Attendants should hear with patience, and answer with caution; should never promise what cannot safely be performed, and, having made a promise, be faithful in its execution.

SECT. 9. The peculiarities of patients must never be made a subject of sport or ridicule, but, rather, withheld from publicity, with tender regard for their feelings and welfare.

SECT. 10. The attendants must rise at the ringing of the morning bell, and at once commence the labors of the day. On opening the sleeping-rooms of the patients, they shall greet the occupants with expressions of kindness, see that they rise (if able), are properly dressed, washed and prepared for breakfast at the appointed hour.

Sect. 11. As soon as practicable after the patients have arisen from bed, the attendants must see that the night-vessels are removed from the rooms and the beds are thrown open for airing; and as soon as other duties will allow, they will remove all soiled bedding, and see that the beds are put in good order.

Sect. 12. Immediately after breakfast, the halls and patients' rooms must be made clean and put in good order, and so kept at all times. Scrupulous care must be given to the water-closets, which will require frequent rinsing with hot water, and the use of disinfectants. The same care must be taken of the wash-bowls, and a sufficiency of clean towels must be at hand, as well as combs and brushes for the hair.

The attendants will follow the same rule of cleanliness in the care of the halls, windows, spaces, back-stairs, and dining-rooms, never being satisfied until they are as clean as they can be made. Patients able and willing to assist in these labors are to be encouraged to do so, *but never compelled to work.* The attendants are held responsible for the complete execution of these requirements.

Sect. 13. The attendants will ever be watchful of the state of the atmosphere in the halls, and report to the office any evidence of impurity which is beyond their power to correct otherwise.

Sect. 14. The attendants must see that clean linen is put on each bed once in every week, and oftener if necessary; and if a sufficient supply of this or of towels is not at hand, the fact must be promptly reported to the supervisor.

Sect. 15. The attendants must see that the tables are properly laid, that everything about them is perfectly clean, and that they are made as inviting as practicable. During meals the attendants must always be present and wait on the table in a respectful and delicate manner, such as they would be willing to have adopted toward themselves under like circumstances. *Patients must not be hurried through their meals*, to hasten the clearing of the table. The attendants must use special care that no knife, fork, or other article is carried from the table by any patient.

SECT. 16. It is obviously improper for the attendants, after the hall work is done, to retire to their own rooms and leave the patients alone during hours of duty. Their time and attention are due to the patients, and must be devoted to keeping them quiet and tidy, preventing improper conduct of every sort, or lapsing into listlessness and torpor; to efforts to preserve their self-respect, and to carry into effect the general direction of the physicians. These ends are to be sought by efforts to keep patients occupied, either in work, reading, games, or judicious social intercourse.

SECT. 17. Visiting from hall to hall during hours of duty, without special business, or going away to other parts of the premises out of one's field of service, is wholly improper, and not allowed.

SECT. 18. The attendants are expected to know how every patient in their charge is employed, and to be vigilant, by every means in their power, to better the condition of every one.

SECT. 19. The attendants must not allow a patient to be taken from the halls by any one employed in other departments unless a general or special permission from a medical officer to that effect has been given; nor will the patients leave the halls before breakfast or on Sunday without the same permission.

SECT. 20. The attendants must always be alive to the welfare of those in their charge, and in the night hold themselves ready to arise and assist the night attendant if the condition of a patient requires it. They will come to the office for medicines or instructions when needed, and follow all directions carefully. After giving medicines, they should wash and return the glasses *at once.*

SECT. 21. If damage is done to buildings or property by patients, the attendants will report it to their supervisor.

SECT. 22. The attendants are never to give up their keys except at the office, on leaving; nor are they ever to admit strangers into the halls without special permission.

SECT. 23. *The attendants will always take care that the clothing worn by patients is adapted to the season and the occasion. In case of sudden change from heat to cold, they must make at once the needed change in clothing.*

SECT. 24. It is particularly expected of attendants to see that every patient is cleanly in person, that the hair and nails are attended to, that any rent in clothing is properly mended, that the garments worn are kept buttoned or hooked, and that any stains from carelessness in eating are promptly removed. Each attendant should keep at hand a sponge and soap, and a small stock of sewing utensils,—as needles, thread, buttons, hooks and eyes, etc.,—for immediate use when needed.

SECT. 25. When the physicians visit the halls, one of the attendants must be at hand to give any information required, to accompany them to any patient's room, or render any other assistance needed.

SECT. 26. Each patient will take a warm bath each week, unless made an exception by direction of the physician. In particular cases of weakness or special delicacy, the sponge bath may be substituted for the tub. In such cases, as well as those who may desire to bathe more frequently, the attendant should apply to the attending physician for specific directions.

The attendants must superintend the baths of patients, and not leave the halls with the bath-rooms open (unless exceptions are made); and in no case must an epileptic or suicidal patient bathe without the presence of an attendant.

SECT. 27. In suitable weather all patients who are able will go out for exercise, accompanied by their respective attendants, on such conditions as shall from time to time be prescribed. In these out-door exercises the attendants must see that no one strays from the party, and so regulate the speed of walking or the character of other exercise as to suit, as well as may be, the average of persons present. They must try to avoid all appearance of restraint, and seek to make these occasions as enjoyable as possible. Preference should be given to walks within the asylum grounds; but when walks are taken into the city, it is not permitted to visit stores, hotels, railroad stations, or other public places, except by permission previously obtained. In the airing-courts the same rules for the care of patients will be observed as apply to the halls. The attendants must not allow any rubbish to accumulate on the ground of the courts.

SECT. 28. The attendants must shave those patients who do not desire to wear the beard. In shaving, great care must be taken to have the razor in good order, and to shave easily and neatly. No other patient should be present; and the razors must be kept under lock and key in the attendant's room.

SECT. 29. The attendants, in their respective halls, will strictly observe the instructions of the superintendent in regard to the time for the patients' retiring; and in assisting them to bed they must practise the same delicacy and courtesy enjoined elsewhere in these rules. Before closing the doors for the night they must see that the patients are comfortably in bed; *and it is especially enjoined* that they offer gentle and patient assistance to the feeble and aged, and leave all with a kind "Good-night."

NIGHT ATTENDANTS.

SECTION 1. The night attendants will visit the office at eight o'clock in the evening, to receive their instructions for the night, and go on duty at once. They will continue in charge of their respective sections of the house until after the ringing of the rising-bell, at the times established, after which they will be relieved by the attendants.

They must be always awake, vigilant, and faithful, giving their whole attention to the condition of the house and the patients. They must make their respective rounds, not hastily, thus leaving a large part of the time to be spent at the office, but dividing it between the various apartments as directed. They must pass through the halls in the most quiet manner, being especially careful in opening and closing doors, and make the personal observations required with the most respectful delicacy, disturbing the patient as little as possible.

They must be especially watchful of the sick, minister tenderly to their wants, carry out scrupulously all instructions in regard to them, and report to a physician any unfavorable change of condition.

They must promptly attend to the call of patients, ascertain their wants, and satisfy them, if practicable.

They must do all in their power to soothe and quiet any who may be wakeful or timid, and assure them of their safety.

SECT. 2. They must be especially vigilant in the care of those inclined to suicide or self-injury, and neglect no effort to be assured of the safety of such, in accordance with the specific directions they receive in each case.

SECT. 3. They must be always watchful in regard to fire, and, if it occurs, must at once, and in the most quiet manner, inform the officers and employés, without a general alarm, and proceed to extinguish it. They must frequently inspect the attics of their respective departments, and see that the iron doors are kept shut.

The safety, the comfort, and the lives of large numbers are intrusted, in a great measure, to the night attendants; and a degree of vigilance and faithfulness corresponding to the magnitude of the interests at stake is expected of them in the execution of all instructions given them.

Sect. 4. It is the imperative duty of the night attendants to report any irregularity or violation of the rules of the house which may come to their knowledge to the superintendent, and not to make the same a subject of remark elsewhere.

Sect. 5. During public exercises in the chapel on Sunday, and other occasions, it is made the duty of the night attendants to look to the condition of the halls in the absence of the attendants.

COOK.

Under the direction of the matron, the cook will have the supervision of the work in the kitchen, the care of utensils, and of supplies of provisions within the kitchen premises.

The cook must see that the kitchen and all utensils are kept clean and in perfect order, that good order is preserved in the kitchen, and that each employé performs all duties assigned in a proper manner.

The cook shall see that all food is prepared as directed, is made palatable and inviting, and sent to the halls hot. Special care must be taken in preparing messes for the sick, that they are nicely cooked, and sent to the patients in acceptable form.

The cook will report to the matron any instance of failure in duty or violation of the rules occurring in the department.

Persons employed elsewhere in the institution will not be allowed to loiter about the kitchen premises or bakery.

If any meat, butter, or other articles of food, of poor quality, are furnished for use, the head cook must promptly report it to the steward or superintendent.

BAKER.

The baker will see that the baking-room, oven, and all utensils belonging to his department are kept scrupulously clean at all times, that the house is kept supplied with the various kinds of bread prescribed, and he must keep his stock of bread sufficiently in advance of the demand that it may not be eaten absolutely new. On the mornings designated, he will make warm rolls or biscuit in season for breakfast.

It is his duty to report at once to the superintendent or steward any defect he may discover in the quality of the flour or other material for food furnished to his department.

PORTER.

The porter will have the whole charge of the food car, and will keep it always clean and in good order; will, at the appointed time, take the prepared meals from the kitchen to the several dumb-waiters, and deliver them to the attendants, who shall be present at the call of the slide-bell, assist the porter in running up the dumb-waiter, if necessary, and remove the meals carefully to the dining-rooms. In this, care must be taken by all that the food and utensils are handled gently, and that the meals reach the table in good order. In like manner must the dishes and slops be received from the attendants by the porter, and by him be properly disposed of.

The porter will be responsible for keeping the basement and attics swept, and everything in its place. It is also his duty to fill the under-beds for the female attendants, great care being taken that the sacks be not soiled in the process. He will also remove the discarded beds each morning to the place designated. At the appointed times, the porter will attend to the delivery of ice to the hall attendants and others, according to instructions of the superintendent. He will see that any objects thrown from the windows during the night are removed promptly in the morning, and will hold himself ready to perform any item of duty required by the superintendent.

ENGINEER.

The engineer will be responsible for the good care of the boilers, engine, steam and water pumps, and all parts of the machinery, which must be kept in repair and in good running order. He shall promptly attend to the repairs needed in steam or water apparatus, or other repairs or alterations assigned to him. It will be his duty to see that the boilers are properly fired, and the fuel used in the most economical and efficient manner. He will see that the radiators, air-chambers, and flues are properly adjusted for heat and ventilation, and that the amount of steam generated is wisely adapted to the state of the weather. It will be his duty in summer to attend to all needed alterations and repairs in steam-heating apparatus, preparatory to the demands of winter.

He must at all times be so thoroughly familiar with the location and condition of all hydrants, hose, or water-cocks provided for the extinguishing of fire, that he can put them in operation instantly, if needed. He will also be expected to hold himself in readiness to attend to any special duty required by the superintendent.

FARMER.

The head farmer will have the immediate supervision of the farm laborers, the laying out of the work, and the direction of the care and use of the stock and farming utensils; and all farm laborers will look to him for specific directions as to their duties.

It is his duty to see that all farm fences are kept in repair, and that everything on the farm and about the farm buildings is kept in perfect order, that the stock is well cared for, that every farmer performs his duty well, and that all material is properly and economically used. He will report to the clerk the time of service of each person in his department, and to the superintendent any fault or failure in duty on the part of any under his charge.

SUCCESSION OF OFFICERS.

TRUSTEES.

Commissioned.	Name.	Residence.
1840, June 20.	Daniel Abbot,	Nashua.
June 20.	Amos Twitchell,	Keene.
June 20.	Ichabod Bartlett,	Portsmouth.
June 20.	John Conant,	Jaffrey.
June 20.	Joseph Low,	Concord.
June 20.	Charles H. Peaslee,	Concord.
June 20.	Ira St. Clair,	Deerfield.
June 20.	Charles A. Cheever,	Portsmouth.
June 20.	John P. Hale,	Dover.
June 20.	Charles J. Fox,	Nashville.
June 20.	Samuel Swasey,	Haverhill.
June 20.	John S. Wells,	Lancaster.
1841, June 15.	Enos Stevens,	Charlestown.
June 15.	George W. Kittredge,	Newmarket.
June 15.	Joseph Low, re-appointed,	Concord.
1843, June 19.	Moses Norris, Jr.,	Pittsfield.
June 19.	Ira St. Clair, re-appointed,	Deerfield.
June 19.	Charles J. Fox, re-appointed,	Nashville.
1845, June 30.	Abiel Walker, *vice* Joseph Low,	Concord.
June 30.	A. McFarland, *vice* G. W. Kittredge,	Meredith.
June 30.	Timothy Hall, *vice* Enos Stevens,	Keene.
June 30.	Luke Woodbury, *vice* C. J. Fox,	Antrim.
June 30.	Wm. Plumer, Jr., *vice* S. E. Cones,	Epping.
Dec. 23.	James Farrington, *vice* A. McFarland,	Rochester.
1846, July 10.	Nathaniel S. Berry,	Hebron.
July 10.	George B. Upham,	Claremont.
July 10.	William Plumer,	Londonderry.

1847,	Aug. 9.	Jos. B. Walker, *vice* A. Walker,	Concord.
	Aug. 9.	Israel Hunt, Jr.,	Nashua.
	Aug. 9.	Warren Lovell,	Meredith.
	Aug. 9.	Thomas Shannon,	Moultonborough.
1848,	June 26.	Wm. Plumer, re-appointed,	Epping.
	June 26.	Franklin Pierce,	Concord.
	June 26.	R. Metcalf, *vice* G. B. Upham,	Newport.
	June 26.	Charles H. Peaslee, re-appointed,	Concord.
1849,	July 3.	Jos. B. Walker, re-appointed,	Concord.
	July 3.	Joseph H. Smith,	Dover.
	July 3.	Amos A. Parker,	Fitzwilliam.
1850,	July 5.	Ralph Metcalf, re-appointed,	Newport.
	July 5.	Isaac Ross, *vice* N. S. Berry,	Hanover.
	July 5.	David Pillsbury, *vice* Wm. Plumer,	Chester.
1851,	July 4.	Chas. Burroughs, *vice* T. Shannon,	Portsmouth.
	July 4.	Israel Hunt, re-appointed,	Nashua.
	July 4.	Warren Lovell, "	Laconia.
1852,	June 19.	Franklin Pierce, "	Concord.
	June 19.	Wm. Plumer, "	Epping.
	June 19.	Chas. H. Peaslee, "	Concord.
1853,	July 1.	Jos. B. Walker, "	Concord.
	July 1.	Jos. H. Smith, "	Dover.
	July 1.	Amos A. Parker, "	Fitzwilliam.
1854,	July 15.	Ralph Metcalf, "	Newport.
	July 15.	Samuel Herbert, "	Rumney.
	July 15.	Enoch D. Yeaton, "	Wakefield.
	Sept. 29.	I. A. Richardson, *vice* William Plumer,	Durham.
1855,	July 10.	Rufus Clement,	Concord.
	July 10.	Alvah Smith, *vice* Ralph Metcalf,	Lempster.
	July 10.	Chas. Burroughs, re-appointed,	Portsmouth.
1856,	Feb. 23.	Timothy Haynes, *vice* R. Clement,	Concord.
	July 11.	John Preston,	New Ipswich.
	July 11.	Chas. H. Peaslee, re-appointed,	Concord.
1857,	June 30.	George B. Twitchell,	Keene.
	June 30.	Jos. B. Walker, re-appointed,	Concord.
	June 30.	John H. White,	Lancaster.
1858,	June 26.	Jeremiah F. Hall,	Wolfeborough.
	June 26.	Ralph Metcalf, re-appointed,	Newport.
	June 26.	Samuel Herbert, "	Rumney.
	Sept. 28.	Edward Wyman, *vice* R. Metcalf,	Newport.
1859,	June 27.	Chas. Burroughs, re-appointed,	Portsmouth.

1859,	June 28.	Timothy Haynes, re-appointed,	Concord.
	June 27.	Woodbury Melcher,	Gilford.
1860,	June 27.	J. A. Richardson, re-appointed,	Durham.
	June 27.	Chas. H. Peaslee, "	Concord.
	June 27.	John Preston, "	New Ipswich.
1861,	July 2.	Geo. B. Twitchell, "	Keene.
	July 2.	Jos. B. Walker, "	Concord.
	July 2.	John H. White, "	Lancaster.
1862,	July 2.	John Conant, "	Jaffrey.
	July 2.	Isaac Spalding,	Nashua.
	July 2.	Moses Clark,	Landaff.
1863,	June 29.	Charles W. Flanders,	Concord.
	June 29.	Charles Burroughs, re-appointed,	Portsmouth.
	June 29.	Woodbury Melcher, "	Laconia.
1864,	July 7.	Charles H. Peaslee, "	Concord.
	July 7.	John Preston, "	New Ipswich.
	July 7.	Wm. G. Perry, "	Exeter.
1865,	July 16.	Geo. B. Twitchell, "	Keene.
	July 16.	Joseph B. Walker, "	Concord.
	July 16.	David R. Burnham,	Plymouth.
1866,	June 22.	Chas. A. Tufts,	Dover.
	June 22.	John Conant, re-appointed,	Jaffrey.
	June 22.	Isaac Spalding,	Nashua.
	Oct. 23.	Isaac Adams, *vice* C. H. Peaslee,	Sandwich.
1867,	June 19.	Charles Burroughs, re-appointed,	Portsmouth.
	June 19.	Woodbury Melcher, "	Laconia.
	June 19.	Ebenezer S. Towle,	Concord.
1868,	April 13.	I. Goodwin, *vice* C. Burroughs,	Portsmouth.
	July 1.	Isaac Adams, re-appointed,	Sandwich.
	July 1.	Waterman Smith, "	Manchester.
	July 1.	Wm. G. Perry, "	Exeter.
	July 1.	Ebenezer S. Towle, "	Concord.
1869,	July 1.	Joseph B. Walker, "	Concord.
	July 1.	Geo. B. Twitchell, "	Keene.
	July 1.	Denison R. Burnham, re-appoint'd,	Plymouth.
1870,	Jan. 3.	John W. Sanborn, *vice* Isaac Adams,	Wakefield.
	July 8.	Isaac Spalding, re-appointed,	Nashua.
	July 8.	Charles A. Tufts, "	Dover.
	July 8.	Dexter Richards, "	Newport.
	Nov. 17.	Ellery A. Hibbard, *vice* W. Melcher,	Laconia.
1871,	Aug. 9.	Ellery A. Hibbard, re-appointed,	Laconia.

1871,	Aug. 9.	Geo. W. Haven,		Portsmouth.
	Aug. 9.	Henry Colony,		Keene.
1872,	July 16.	Waterman Smith, re-appointed,		Manchester.
	July 16.	Wm. G. Perry,	“	Exeter.
	July 16.	John W. Sanborn,	“	Wakefield.
1873,	Oct. 23.	Joseph B. Walker,	“	Concord.
	Oct. 23.	Geo. B. Twitchell,	“	Keene.
	Oct. 23.	Josiah Minot,		Concord.
1874,	July 8.	Isaac Spalding, re-appointed,		Nashua.
	July 8.	Charles A. Tufts,	“	Dover.
	July 8.	Dexter Richards,	“	Newport.
1875,	July 26.	Ellery A. Hibbard,	“	Laconia.
	July 26.	Charles H. Bell,		Exeter.
	July 26.	Albert Smith,		Peterborough.
1876,	June 22.	David Gillis,		Nashua.
	July 20.	William G. Perry, re-appointed,		Exeter.
	July 20.	Waterman Smith,	“	Manchester.
	July 20.	Joseph B. Burrows,		Plymouth.
	Aug. 10.	John V. Barron, *vice* J. Minot,		Concord.
1877,	Oct. 17.	Joseph B. Walker, re-appointed,		Concord.
	Oct. 17.	Geo. B. Twitchell,	“	Keene.
	Oct. 17.	John V. Barron,	“	Concord.
1878,	May 2.	John H. George, *vice* J. V. Barron,		Concord.
	May 2.	Carlton P. Frost, *vice* A. Smith,		Hanover.
	July 8.	Dexter Richards, re-appointed,		Newport.
	July 8.	Charles A. Tufts,	“	Dover.
	July 8.	David Gillis,	“	Nashua.
1879,	July 30.	Ellery A. Hibbard,	“	Laconia.
	July 30.	Jeremiah F. Hall,		Portsmouth.
	Aug. 14.	Carlton P. Frost, re-appointed,		Hanover.
1880,	July 20.	William G. Perry,	“	Exeter.
	July 20.	Waterman Smith,	“	Manchester.
	July 20.	Joseph Burrows,	“	Plymouth.
1881,	Oct. 12.	Joseph B. Walker,	“	Concord.
	Oct. 12.	Geo. B. Twitchell,	“	Keene.
	Oct. 12.	John H. George,	“	Concord.
1882,	June 21.	Emery J. Randall,		Somersworth.
	June 21.	Frederick J. Potter,		Portsmouth.
	Sept. 22.	Dexter Richards, re-appointed,		Newport.
1883,	April 26.	William H. H. Mason, *vice* J. Burrows,		Moultonborough.
1883,	May 17.	Edward Spalding, *vice* F. E. Potter,		Nashua.
	Aug. 28.	Ellery A. Hibbard, re-appointed,		Laconia.

1883,	Aug. 28.	Carlton P. Frost, re-appointed,	Hanover.
	Aug. 28.	Jeremiah F. Hall, "	Portsmouth.
1884,	July 25.	Wm. G. Perry, "	Exeter.
	July 25.	Waterman Smith, "	Manchester.
	July 25.	Wm. H. H. Mason, "	Moultonborough.
1885,	Oct. 14.	Joseph B. Walker,	Concord.
	Oct. 14.	Geo. B. Twitchell,	Keene.
	Oct. 14.	John H. George,	Concord.

PRESIDENTS.

John H. Steele	1839–1840
John Conant	1840–1846
George B. Upham	1847–1848
William Plumer	1848–1855
Charles Burroughs	1855–1868
Isaac Spalding	1868–1875
George B. Twitchell	1875–

SECRETARIES.

Dixi Crosby	1839–1841
Charles H. Peaslee	1841–1848
Joseph B. Walker	1848–

TREASURERS.

James Thorn	1839–1840
Joseph Low	1840–1846
John Atwood	1846–1847
Andrew McFarland	1847–1852
John E. Tyler	1852–1857
Jesse P. Bancroft	1857–

SUPERINTENDENTS.

George Chandler	1842–1845
Andrew McFarland	1845–1852
John E. Tyler	1852–1857
Jesse P. Bancroft	1857–1882
Charles P. Bancroft	1882–

ANNUAL REPORTS

OF THE

TRUSTEES, SUPERINTENDENT, AND TREASURER

OF THE

INDUSTRIAL SCHOOL

OF THE

STATE OF NEW HAMPSHIRE,

TO THE

GOVERNOR AND COUNCIL,

JUNE, 1887.

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

OFFICERS.

TRUSTEES.

Hon. OLIVER PILLSBURY, *President*	Concord.
Hon. DANIEL CLARK, *Secretary*	Manchester.
D. W. JOHNSON, Esq.	Claremont.
J. W. PEPPARD, Esq.	Rumney.
D. W. BILL, Esq.	Gilsum.
J. HORACE KENT, Esq.	Portsmouth.
J. C. LINEHAN, Esq.	Penacook.

SUPERINTENDENT AND TREASURER.

JOHN C. RAY.

MATRON.

Mrs. JOHN C. RAY.

TEACHERS.

Miss B. F. SCOVILLE.
Miss ALICE SCOVILLE.
Miss MARY E. RAY.

TRUSTEES' REPORT.

To His Excellency the Governor and the Honorable Council for the State of New Hampshire:

Herewith is transmitted the report of the superintendent of the Industrial School for the year ending March 31, 1887. It contains so much in detail and gives so full information of the present condition of the school that very little need be added in the report of the trustees. For many years past the trustees have held quarterly meetings at the institution and made a full examination of its condition in its several departments.

They have examined it carefully and are enabled to speak confidently of its superior condition under the able management of its present superintendent, matron, teachers, and officers.

Without claiming anything for themselves, the trustees feel warranted in saying it is a model institution, a home for the homeless and friendless, a school for the ignorant, a restraint and guard for the erring, and a guide to a life of industry, usefulness, morality, and piety towards which and into which a large majority of the inmates are led.

The farm is in good condition and well husbanded, the buildings in good repair and improved, the inmates healthy, progressive in their studies, industrious in their employment, generally well contented and well-behaved. There is an atmosphere about the place which seems to be morally as well as physically healthful.

The new industry, which has been undertaken at the school, of knitting hosiery, promises well. The inmates like the work and it opens to them a better chance for employment after they have left the institution than they have heretofore had, while it affords as fair remuneration as has heretofore been obtained for other employments.

The expenses for the past year have been about the same as heretofore and are stated by the treasurer in the report of the superintendent. The bills of the institution are examined every quarter by the trustees, found to be kept carefully paid by the superintendent and no indebtedness of any material amount incurred.

The trustees join in the request of the superintendent that, during the session of the coming Legislature, your Excellency, the honorable Council, and the members of the Legislature will visit the institution, feeling assured by past experience that the better and wider the institution becomes known the stronger will be its hold upon the community.

The trustees cannot close without expressing their appreciation of the very able management of the superintendent, matron, and teachers and officers in immediate charge of the institution.

DANIEL CLARK, *Secretary.*

REPORT

OF THE

SUPERINTENDENT AND TREASURER.

To His Excellency the Governor, the Honorable Council, and the Honorable Board of Trustees:

I respectfully submit for your examination the annual report of the State Industrial School for the year ending March 31, 1887:

Whole number committed to the institution since its organization in 1858	1,279
Number in school April 1, 1886	112
Whole number in school during the year	150
Number discharged at expiration of sentence	14
Number discharged on probation	11
Number honorably discharged	7
Number escaped	2
Sent to alternate sentence	1
Number in school April 1, 1887	119
Average time of detention of those discharged	2⅓yrs.

PARENTAGE.

American	73
Irish	42
French	23
Scotch	3
German	3
Norwegian	1
Negro	4
Indian	1

HOW COMMITTED.

Number committed by supreme court	37
" " police court	67
" " justices of peace	44
" " parents and guardians	5
" " circuit court	1

TERM OF COMMITMENT.

During minority	61
For the term of 8 years	1
" " 6 years	4
" " 5 years	14
" " 4½ years	1
" " 4 years	6
" " 3½ years	1
" " 3 years	29
" " 2 years	11
" " 1½ years	1
" " 1¼ years	1
" " 1 year	20
" " 1 year and day	1
Until 18	3

OFFENCE.

For stealing	67
breaking and entering	33
stubbornness, idleness, and disobedient	24
truancy	5
assault	6
lewdness	6
putting obstructions on railroad	2
malicious mischief	2
incendiarism	6
drunkenness	2
obtaining goods under false pretences	1

AGE WHEN COMMITTED.

At the age of 7 years	1
" 8 years	4
" 9 years	3
" 10 years	13

At the age of 11 years	14
" 12 years	18
" 13 years	25
" 14 years	28
" 15 years	24
" 16 years	22
" 17 years	2

PRESENT STANDING OF PUPILS IN SCHOOL.

Reading.

	Boys.	Girls.
General reading	24	5
Reading in Fifth Reader	20	12
" Fourth Reader	22	7
" Third Reader	6	2
" Second Reader	6	
" First Reader	5	1

Writing.

Instructed in penmanship	92	27

Arithmetic.

Studying cube root	14	3
" interest	16	4
" denominate numbers	11	5
" fractions	24	6
" mental arithmetic	80	9

Geography.

Studying manual of geography	21	7
" elementary geography	28	13

History.

Studying English History	52	18
" History of United States	52	18

Physiology.

Studying Steele's Physiology	60	21

Philosophy.

Studying Hooker's Natural Philosophy	20	6

Besides the foregoing tables, I do not propose making an extended report, as nothing has transpired during the past year to call for a very lengthy notice. We hope for an early visit during the coming legislative session from your excellency and your council, together with both branches of the Legislature, which will enable you to judge much better of the standing and condition of the school than I can describe in even a lengthy report.

I will simply say that in many ways we have been abundantly blessed during the past twelve months. Excellent health has prevailed; we have not had an inmate in our hospital on account of sickness for a year. Several accidents have required the treatment of a physician.

The advancement of the children under the supervision of our principal teacher, Miss B. F. Scoville, has been very commendable. The boys and girls have been obedient and industrious, generally satisfied with their home here, as is evinced by the few attempts to escape.

In our first annual report the attention of the Legislature was called to the importance of further industrial training of the boys and girls, as the work at that time was almost entirely confined to chair-seating and farming. In the year 1879 the Legislature generously voted an appropriation sufficiently large to enable us to commence, in a small way at least, the enterprise desired by us. On account of seeming difficulties but little progress was made until about a year ago, when with the appropriation and accumulated interest we erected a substantial building, in connection with available room in our main building, to start quite an enterprise in the way of a hosiery mill, which is now in successful operation. Nearly half of the boys and girls are daily employed at this work.

Our religious services on the Sabbath have been conducted the past year by the Women's Christian Temperance Union, with satisfactory results. Clergymen of the different religious societies have assisted in the work. The Catholic children have been instructed during the year by Rev. Fathers Reilley and Timon, and their teachings and influence have been very beneficial.

The publishers of the following-named papers will please accept the hearty thanks of the children for their kindness and generosity in furnishing gratuitously their interesting papers. These papers reaching our children weekly from the vicinity of their former homes are particularly interesting to them as a medium of local news: "Dover Enquirer," "Cheshire Republican," "New Hampshire People and Patriot," "Portsmouth Journal," "Morning Star," "Our Dumb Animals," "New York Pioneer," "Plymouth Record," "Howard Times," and twenty-five copies of "Every Other Saturday."

We again return thanks in behalf of the children to Mrs. Nathaniel White, of Concord, for her renewed donation for the purchase of books for the library; also for books and papers from Rev. H. J. Rhodes, and Miss Susan Dolbeer, Epsom.

The legacy of one thousand dollars from Miss Louise Penhallow, of Portsmouth, remains in the savings bank; the interest, as provided in her will, is annually expended in replenishing our library.

The income from the James McKean Wilkins and Moody Kent funds is also expended according to the wills of the testators.

Two years ago ex-Gov. Frederick Smyth very kindly gave the school one hundred dollars for the benefit of the library, and also generously donated four hundred dollars, the income of which is to be annually expended for books to be given to deserving children. His generosity is appreciated by them, as is evidenced on every occasion when the boys and girls have the privilege of meeting him.

To the honorable board of trustees, we wish to acknowledge your great kindness. For thirteen years we have endeavored to serve you and the State faithfully, and do our duty as we understood it. Your constant approval has gone far to sustain us in our arduous duties.

J. C. RAY, *Superintendent.*

FARM.

The products of the farm are as follows:

110 tons of hay	$1,700.00
68 tons of corn fodder	275.00
700 bushels of potatoes	280.00
90 bushels of onions	50.00
769 bushels ears of corn	100.00
450 bushels of carrots	110.00
50 bushels of green peas	35.00
75 bushels of beans	45.00
50 bushels of cucumbers	35.00
60 bushels of tomatoes	20.00
50 bushels of sweet-corn ears	50.00
65 bushels of turnips	20.00
70 bushels of beets	50.00
3000 heads of cabbage	150.00
2325 pounds of pork	140.00
Pigs and live stock sold	536.00
Milk and butter	1,000.00
Lettuce, radishes, etc.	10.00

INVENTORY OF PROPERTY.

13 grade cows	$800.00
5 Short-horn cows, thoroughbred	265.00
1 grade two-year-old heifer	40.00
1 grade heifer calf	18.00
3 grade one-year-old Durham heifers	50.00
2 Jersey cows	100.00
1 two-year-old Durham bull	150.00
1 Durham bull calf	30.00
2 Durham heifer calves	40.00
23 swine	200.00
4 horses	550.00
2 yokes oxen	400.00

HAY, PROVISIONS, ETC.

60 tons of hay	$1,000.00
200 bushels of potatoes	150.00

40 barrels of flour	$200.00
50 bushels of corn	20.00
2 barrels of pork	35.00
Kerosene	5.00
Sugar, tea, coffee, molasses	60.00
Salt, spices, etc.	15.00
100 cords of wood	400.00

BOYS' DINING-ROOM AND COOK-ROOM.

Cooking-stove and baker	$20.00
140 chairs	45.00
Crockery	70.00
Knives and forks	20.00
Iron and tin ware	35.00
Tables	45.00
Bread-trough, clock, etc.	10.00
Table-covers	25.00
Meat-cutter	2.00
Movable closets	10.00
Lamps and lanterns	5.00

FAMILY COOK-ROOM AND DINING-ROOM.

Cooking-stove and furniture	$50.00
Refrigerators	80.00
Dining tables and chairs	50.00
Knives and forks	15.00

CHAIR SHOP.

Work-stands	$130.00
Work-tables	3.00
Clock	3.00

PRINTING-OFFICE.

Press, type, etc.	$115.00

HOSIERY MILL.

Knitting-machines, etc., and engine	$2,300.00

CARPENTER SHOP.

Lathe	$40.00
Three sets carpenter's tools	175.00
Benches, etc.	50.00

SHOE SHOP.

Shoes	$100.00
Leather and findings	20.00
Lasts and tools	10.00
Benches	5.00

GIRLS' SEWING-ROOM.

Work-table and cover	$10.00
Chairs and lounge	25.00
Buttons, needles, thread, etc.	8.00
Cloth on hand	200.00
Boys' clothing	800.00
Girls' clothing	250.00
Eight sewing-machines	110.00

CARRIAGES, WAGONS, AND FARMING UTENSILS..

1 carry-all	$140.00
1 rack wagon	20.00
2 horse carts	80.00
2 farm wagons	90.00
2 two-horse wagons	75.00
2 ox carts	80.00
1 express wagon	30.00
1 buggy wagon	40.00
1 large spring wagon	30.00
1 top buggy	100.00
1 six-horse barge	180.00
1 booted buggy	35.00
1 light buggy	60.00
Sleigh	8.00
Double sleigh	60.00
4 horse sleds	50.00
12 harnesses, 4 robes	260.00
Stone-drags, wheelbarrows, 1 grindstone, 2 seed-sowers	25.00
10 plows, 5 harrows, 2 cultivators	135.00
1 Kemp manure-spreader	60.00
Iron bars, manure-forks, 2 bush-scythes and snaths	25.00
Hay-cutter, shovels, spades, hoes, and picks	70.00
2 mowing-machines	75.00
1 pair cart-wheels, whiffletrees, eveners, and chains	30.00
2 platform scales, 1 hay scale, scale beams, ropes, and blocks	50.00

3 bush-hooks, 2 spread chains and yokes	$16.00
Horse-rake and tedder	10.00
Axes, saws, ox-yokes, and chains	25.00
Pitchforks, rakes, drills, wedges, and stone-hammer	15.00
Ladders, carpenter's and piping tools	65.00
Grain and meal chests and fanning-mill	10.00
Steam box, kettles, etc.	50.00
Lead pipe and old iron	8.00
1 horse-power, 1 ensilage-cutter	135.00

SLEEPING-HALLS.

Bedsteads and bedding	$500.00
Crosby bed	20.00

SCHOOL-ROOMS.

65 settees	$130.00
70 double desks and chairs	50.00
Blackboards, clocks, and teachers' desks	25.00
School books, slates, etc.	75.00
Lamps and hangings	10.00
Book-case and library books	100.00
Cabinet organs	65.00
House plants	30.00

OFFICE AND LIBRARY.

Tables, chairs, lounges, desks	$140.00
Books and book-cases	300.00
Stationery and stamps	20.00
Safe	60.00
Fire extinguishers, fire escape	100.00
Clock, hanging-lamp, and flowers	60.00

RECEPTION-ROOM AND GUEST-CHAMBER.

Carpets and curtains	$140.00
Center and side tables, sofas, chairs	130.00
Beds and bedding	40.00
Lamps, stove, etc.	25.00

OFFICERS' ROOMS.

Furniture, beds, bedding	$520.00
Nine wardrobes	35.00

DETAILED ACCOUNT OF CASH RECEIVED FROM APRIL 1, 1886, TO APRIL 1, 1887.

1886.			
April	1.	From state treasurer, quarterly appropriation	$1,500.00
	2.	Merrimack county, for board	117.00
		Wm. A Berry, for board	32.00
		Laconia, for board	19.50
	3.	Manchester, for board	504.36
		Rockingham county, for board	136.50
	5.	Nashua, for board	136.50
		Grafton county, for board	139.28
	6.	Keene, for board	19.50
		Lisbon, for board	5.57
	7.	Claremont, for board	19.50
		Pittsfield, for board	19.50
	10.	Portsmouth, for board	37.50
	13.	Newport, for board	78.00
		Plainfield, for board	58.50
		Cheshire county, for board	175.50
		E. F. Frost, for board	4.50
	15.	Weare, for board	19.50
		Hillsborough county, for board	256.50
	16.	Whitefield, for board	19.50
	20.	Nashua, for board	39.00
		W. F. Whitney, for chair-work	100.00
		Dover, for board	39.00
		Seabrook, for board	19.50
	22.	Sullivan county, for board	39.00
	27.	Strafford county, for board	97.50
		Coös county, for board	39.00
	29.	Mrs. Nathaniel White, to be expended for books	15.00
May	1.	Concord, for board	39.00
	4.	Col. J. Horace Kent, for pigs	11.50
	7.	E. F. Frost, for board	4.50
	11.	F. P. Brickett, for rent	10.00
	13.	W. F. Whitney, for chair-work	69.86
	22.	Walter Heywood Chair M'f'g Co.	636.99
	24.	Wm. A. Berry, for board	4.00
		Kimball & Gerrish, for hide	2.65
		use of animals	1.00
June	4.	Mrs. Susan S. Clark, for board	6.00

June	8.	From F. P. Brickett, for rent	$10.00
	16.	E. F. Frost, for board	9.00
	22.	Troy, for board	39.00
	25.	Dalton, for board	39.00
		interest from Miss Louise Penhallow's legacy	50.00
	29.	dividend on ex-Gov. Fredk. Smyth memorial fund	8.33
	30.	H. P. Ray, for labor in hosiery mill	145.35
		Z. P. Alden, for provisions	9.50
		cream	3.91
July	1.	state treasurer, for quarterly appropriation	1,500.00
		coupons on bonds from McKeen-Wilkins fund	70.00
	2.	Merrimack county, for board	105.86
		Lisbon, for board	19.50
		Whitefield, for board	19.50
		Merrimack River Savings Bank, part Moody Kent fund	1,500.00
		Merrimack River Savings Bank, interest on Moody Kent fund	62.50
	3.	Cheshire county, for board	175.50
		Concord, for board	26.14
	6.	H. Campbell, for barrel of flour	5.40
		Keene, for board	19.50
		Manchester, for board	535.93
	7.	Grafton county, for board	142.93
		Mrs. S. S. Clark, for board	5.00
		Kimball & Gerrish, for hide	7.50
	8.	Nashua, for board	119.08
		Laconia, for board	19.50
	9.	Rockingham county, for board	133.43
		Claremont, for board	19.50
		Portsmouth, for board	43.28
	13.	Dover, for board	55.50
	15.	Kimball & Gerrish, for hide	7.25
	16.	Weare, for board	19.50
		Hillsborough county, for board	249.00
Aug.	5.	Mrs. S. S. Clark, for board	1.00
	8.	Strafford county, for board	96.00
	10.	Pittsfield, for board	19.50
	12.	Sullivan county, for board	25.93

Aug.	12.	From Carroll county, for board	$78.00
	14.	H. P. Ray, for labor in hosiery	98.20
	26.	Newport, for board	78.00
Sept.	9.	Kimball & Gerrish, for hide	6.66
	10.	Wheeler & Wilson Co., discount on machine	30.00
	13.	Coös county, for board	19.50
	15.	coupons from Wilkins fund	90.00
	16.	F. P. Brickett, for rent	15.00
	30.	C. T. Allen, for beef	74.71
		S. Davenport, for provisions	6.52
		Z. P. Alden, for provisions	10.09
		E. J. Hibbard, for provisions	2.00
		G. L. Roberts, for provisions	8.00
		Ray & Burleigh, for labor in hosiery	263.04
		cream and milk	5.04
Oct.	1.	state treasurer, quarterly appropriation	1,500.00
		Somersworth, for board	12.00
	2.	Manchester, for board	519.00
		Newport, for board	78.00
		Concord, for board	12.00
	4.	United States, for board	16.45
		Claremont, for board	19.50
		Cheshire county, for board	175.50
	5.	Carroll county, for board	19.50
		Walter Heywood Chair M'f'g Co., for chair-work	275.39
	6.	Laconia, for board	19.50
		Burleigh & Bodwell, for cow	55.00
		Kimball & Gerrish, for hide	5.36
	7.	Portsmouth, for board	93.00
		Sullivan county, for board	19.50
		Nashua, for board	80.35
	8.	Merrimack county, for board	117.00
		Rockingham county, for board	117.00
	11.	Plymouth, for board	24.00
	12.	Hillsborough county, for board	216.86
	16.	Grafton county, for board	156.00
	20.	Nashua, for board	19.50
	30.	Seabrook, for board	6.43
Nov.	1.	G. L. Roberts, for board	8.00
		E. J. Hibbard, for board	8.00
	4.	Dover, for board	58.50

Nov.	5.	From Coös county, for board	$19.50
		N. H. Grange Fair, for premiums	12.00
	9.	United States, for board	32.20
	10.	Strafford county, for board	76.50
		J. C. Ray, for two pair three-year-old steers	200.00
	16.	J. C. Ray, for pig	2.00
		Eastman Smith, for calf	12.00
	20.	Walter Heywood Chair M'f'g Co., for chair-work	285.37
Dec.	2.	G. L. Roberts, for board	10.00
		E. J. Hibbard, for board	10.00
	11.	Dalton, for board	13.50
	21.	M. F. Dodge, for labor of boys and oxen	4.75
		Harry Simons, for bobbins and winder	47.00
	29.	Ray & Burleigh, for labor in hosiery	491.58
		Weare, for board	19.50
		Smith & Whitefield, for barrel flour	5.50
	30.	R. E. Wheeler, for hide and tallow	4.29
		G. L. Roberts, for board	8.00
		E. J. Hibbard, for board	3.00
		S. M. Davenport, for board	8.00
		Z. P. Alden, for provisions and wood	26.61
		S. M. Davenport, for provisions	2.26
		Elbridge Hill, for barrel sugar	16.56
		cream	2.18
		coupons from Wilkins fund	45.00
1887.			
Jan.	1.	state treasurer, quarterly appropriation	1,500.00
		Troy, for board	58.50
		Pittsfield, for board	69.93
	4.	Keene, for board	50.14
		Laconia, for board	19.50
	5.	Plainfield, for board	58.50
		Grafton county, for board	142.50
		Sullivan county, for board	10.50
	6.	Claremont, for board	19.50
		Manchester, for board	551.14
		Manchester, for labor	288.82
		Newport, for board	78.00
	7.	Rockingham county, for board	131.35
	8.	Somersworth, for board	19.50
	10.	Pelham, for board	18.43

Jan.	11.	From J. O. Clark, for cutting and filling a silo	$42.75
		Carroll county, for board	19.50
		Portsmouth, for board	97.50
		Cheshire county, for board	171.64
	12.	coupons on bonds from Wilkins fund	35.00
		Hillsborough county, for board	234.00
	13.	G. W. Smith, for board	39.00
		Merrimack county, for board	139.50
	20.	Nashua, for board	58.50
	25.	Strafford county, for board	57.00
		Kimball & Gerrish, for hide	6.51
Feb.	1.	G. L. Roberts, for board	9.00
		Nashua, for board	3.00
	2.	Plymouth, for board	19.50
	3.	Rumney, for board	18.64
		F. P. Brickett, for board	10.00
	5.	Weare, for board	19.50
		Smith & Whitefield, for 100 lbs. fish	3.25
	14.	Augustus Woodbury, for seating chair	.50
	15.	Charles Rowell, for pig	5.40
	19.	J. W. Peppard, for two pigs	8.85
Mar.	7.	S. M. Davenport, for board	18.00
	14.	F. P. Brickett, for rent	10.00
	15.	coupons from Wilkins fund	45.00
	24.	S. K. Pierce & Son, for chair-work	253.80
	29.	Walter Heywood Chair M'f'g Co.	280.94
	30.	United States, for board	32.20
		M. F. Dodge, for wood	4.12
		R. E. Wheeler, for beef, hide, and tallow	117.18
	31.	Henry W. Brown, for wood and milk	14.40
		Z. P. Alden, for wood	5.00
		S. M. Davenport, for board	8.00
		J. H. Wiggin & Co., for beef	54.64
		Elbridge Hill, for barrel sugar	15.10
		interest from Wilkins fund	80.80
		interest from ex-Gov. Fredk. Smyth fund, in memory of Mrs. Emily Smyth	20.26

DETAILED ACCOUNT OF CASH PAID.

	POST-OFFICE.		
1886.	For box rent from April 1, 1886, to April 1, 1887		$8.00
	B. W. CURRIER & CO.		
April 2.	For 3 suits, $14; 3 overcoats, $4		$18.00
	CLARKE & BROWN.		
8.	For repairing watchman's clock		$1.50
	CHARLES W. ROWELL.		
12.	For 1 yoke of oxen		$145.00
	FIRST CONGREGATIONAL SOCIETY.		
1.	For rent three seats from April 1, 1886, to April 1, 1887		$33.60
	CHEMICAL HAND FIRE EXTINGUISHER CO.		
22.	For 5 No. 4 annihilators, brass finish	$75.00	
	Discount for public benefit	25.00	
			$50.00
	FRED WATTS.		
26.	For 1 clock		$4.00
	C. C. CURRIER.		
28.	For tuning and repairing organ		$2.00
	OLIVER PILLSBURY.		
29.	For traveling expenses as trustee for one year		$6.00
	LEWIS G. TEWKSBURY.		
12.	For carbolic-acid crystals, prescriptions	$1.20	
	For Cuticura, gallon alcohol	3.00	

July 13.	For McGee's Emulsion, cough drops, prescription	$1.60	
Aug. 17.	For gallon witch-hazel, $1.50; 4 prescriptions	3.05	
Nov. 16.	For cough drops, 1 qt. whisky	1.45	
1887.			
Jan. 31.	For prescriptions, 1½ gals. hamamelis	3.45	
	For fir balsam	40	
			$14.15

J. W. PEPPARD.

1886.		
April 29.	For traveling expenses as trustee one year	$15.00

DANIEL W. BILL.

April 29.	For traveling expenses as trustee one year	$24.00	
Dec. 23.	ox-yoke and 2 pairs ox-bows	2.85	
	268 lbs. apple jelly	17.42	
			$44.27

JOHN C. LINEHAN.

April 29.	For traveling expenses as trustee	$4.00

J. H. BROWN.

April 30.	For 18½ days' painting	$28.00

MRS. MARY SCOVILLE.

May 6.	For 27 gals. maple syrup	$18.90

O. D. CARPENTER.

April 23.	For 24 days' mason work	$78.00	
	20 ft. 8-in. Akron pipe	6.30	
1887.			
Jan. 1.	5¾ days' mason work and stock	23.00	
			$107.30

TUBBS & HUMPHREYS.

1886.		
May 1.	For 3 seaming-machines	$240.00

JOHN O. MERRILL.

April 30.	For drawing 34 cords slabs	$25.50	
1887.			
Mar. 12.	8 bbls. apples, 1 cart-tongue	12.75	
			$38.25

E. G. KNAPP.

April 28.	For cutting hair for 73 boys	$7.30

S. A. FELTON & SON.

May 22.	For 7 floor scrub-brushes	$5.00

W. D. HUSE.

May 29.	For 2 top-looms	$200.00

A. S. THOMPSON.

1886.		
May 8.	For fruit and ornamental trees, shrubs, and grape-vines	$100.00

J. M. WOODBRIDGE.

May 13.	For 25 qts. hulled corn	$1.04

F. P. PROCTOR.

May 20.	For recutting axles, resetting boxes, axles, and nuts	$9.25	
Aug. 2.	recutting axles, etc.	1.75	
Nov. 22.	recutting 3 wagon axle-trees	4.50	
			$15.50

FRANK HUTCHINSON.

May 4.	For 1 cow, $30; boot between oxen, $75	$105.00

TAYLOR & FLANDERS.

May 24.	For 4 doz. verbenas	$1.60

JOHN B. CLARKE.

April 22.	For advertising annual examination	$4.50	
	printing 500 postal invitations	6.50	
Dec. 9.	advertising	7.42	
			$18.42

CHARLES S. RAY.

June 5.	For 1 yoke oxen		$200.00

JOHN PRINCE.

May 20.	For grafting trees ($2\frac{1}{2}$ days)		$5.00

JAMES L. BRANSON.

May 12.	For 10 knitting-machines	$413.50	
Dec. 13.	knitting-machine, $35.18; 21 cylinders, $228.15	263.33	
			$676.83

R. G. CHASE & CO.

May 10.	For nursery stock		$12.50

H. L. ROBINSON.

June 2.	For 1 wheel-hoe, $5; 14 gals. cider, $2.10		$7.10

UNION PUBLISHING CO.

April 21.	For advertising examination, daily and weekly one week	$8.50	
Dec. 9.	advertising	7.00	
			$15.50

C. W. CLEMENT, D. D. S.

	For extracting teeth for inmates, from Oct. 7, 1883, to Nov. 24, 1886		$14.50

WINSLOW, RAND & WATSON.

April 15.	For 1 hhd. molasses, $28.20; carting	$28.70	
June 30.	100 lbs. Java coffee, $23; 1 lb. nutmeg	23.55	
			$52.25

ABEL MACHINE CO.

May 1.	For 24 seamer points, 10 claws	$5.08	
June 14.	10 Branson tensions, $35; 12 seamer needles	36.20	
			$41.28

KENDALL & LADD.

April 24.	For advertising examination .	$1.50	
Oct. 30.	2 copies "Weekly Budget," $2.50; advertising . .	5.00	
			$6.50

JAMES E. RAND.

June 15.	For arresting Harry Clark	$10.00

BISHOP & BROTHER.

June 2.	For extension chair	$2.50

MORSE, WILSON & CO.

Feb. 19.	For 570½ yds. cottonade, $99.88; 6 doz. hose	$108.58	
April 5.	3 doz. shirts, 1 doz. check coats	24.50	
	47 yds. ticking, $5.88; 1½ doz. Jerseys	24.63	
	166 yds. print, $9.15; 148 yds. duck	29.51	
Dec. 17.	8 doz. cardigan jackets, $76.50; 1 doz. gloves .	81.25	
	6½ doz. mittens, 3 doz. suspenders, 1 doz. wristers .	28.76	
	5½ doz. shirts, ⅔ doz. Jersey overshirts, ⅓ doz. Jersey coats	52.67	
1887.			
Feb. 19.	578½ yds. cottonade, 98 yds. cassimere	130.49	
			$480.39

UNITED STATES AND CANADA EXPRESS CO.

1886.	For boxes, bundles, etc., from March 9, 1886, to Feb. 14, 1887	$26.67

E. F. WILSON.

May 1.	For 2 pigs	$18.50

M. PRESTON.

May 27.	For 2 bbls. apples	$1.50

A. L. N. ROBERTSON.

Mar. 17.	For 140 ft. sheathing, 41 ft. floorboards	$5.48	
Aug. 9.	filing saws	2.00	
			$7.48

S. P. PIKE & CO.

Mar. 12.	For 100 lbs. turkey, $10.00; 86½ lbs. butter	$23.17

A. M. EASTMAN.

Feb. 27.	For 3 qts. oysters, 3 lbs. crackers	$1.32

DRAKE & DODGE.

Mar. 15.	For 1 case soap, $10.00; 12 lbs. pepper	$12.40	
Oct. 8.	50 lbs. coffee, $6.50; bag rye meal, $1.65	8.15	
22.	51 bbls. Pillsbury flour	262.75	
1887.			
Jan. 20.	10 bags oats, 3 bags cottonseed, 2,180 lbs. bran	33.86	
			$317.16

J. G. LAKE.

May 4.	For 1 lap-robe	$10.00	
July 22.	1 sheet scrim, box hoof ointment	3.25	
Sept. 14.	hitch-rein, harness repairs	1.25	
			$14.50

ELLIOT & JENKINS.

May 29.	For 3 pulleys, 1 coupling, $4.00; labor, $23.00	$27.00

HARVEY & HENRY.

May 4.	For 4,000 lbs. middlings, $42.50; 2,000 lbs. bran, $19.00	$61.50	
Oct. 29.	4,000 lbs. s'k'd bran	34.00	
			$95.50

JOHN F. WOODBURY & CO.

1886.		
	For shoeing horses from March 22, 1886, to March 16, 1887	$86.15

R. M. ROLLINS.

June 19.	For drive-wheel to Buckeye machine	$5.00	
July 22.	sections for mowing-machines	17.91	
			$22.91

SAMUEL BURNHAM.

April 23.	For 6 bbls. apples, $7.00; 4 doz. eggs	$8.00	
Dec. 18.	229 lbs. beef, $16.00; 21 bbls. apples, $17.00	33.00	
			$41.00

JAMES P. SCOVILLE.

June 24.	For 12 doz. raspberry jelly	$8.64

O. C. MOORE.

Mar. 26.	Nashua Telegraph, from 1883 to 1886	$4.50

R. B. PHERSON.

June 29.	For 35 gals. vinegar	$5.25

NEW ENGLAND TELEPHONE & TELEGRAPH CO.

For telephone rental and service from Feb. 1, 1886, to April 1, 1887	$96.76

B. F. WITHAM.

For 600 lbs. Georgia cod in June, August, and October, 1886	$22.50

J. C. RAY.

April 1.	For 8¼ cords hard wood, $41.25; hog, weight 308 lbs.	$59.73	
Nov. 1.	pasturing four three-year-old steers, 1 cow	22.00	
			$81.73

JOHN K. PIPER.

May 5.	For 33¾ yds. cambric, $1.35; 8 undervests	$3.75	
	1½ doz. towels, elastic, parasol	3.72	
June 4.	148½ yds. dress goods, $11.86; 18 yds. scrim, 2 doz. napkins	15.16	
			$22.63

C. H. HOVEY & CO.

June 30.	For 6 Japan ivy plants		$1.50

THOMAS W. LANE.

1886.			
April 6.	For 3 gro. crayons, Spaulding's league ball . . .	$1.89	
May 24.	2 doz. writing-books, 1 Monroe primer	2.65	
June 26.	12 Maury's Geographies, $7.68; 2 gro. pens, $1.95	9.63	
Aug. 18.	balls and bats, $6; 27 Natural Philosophies, $6.55 . .	12.55	
Oct. 19.	$8\frac{1}{2}$ doz. writing-books, $10.20; 12 Swinton's Geographies .	17.40	
25.	6 Monroe First Readers, 9 White's Arithmetics . .	5.00	
Nov. 27.	6 Monroe Fourth Readers, $3.78; indelible ink . .	4.03	
Dec. 22.	1 gro. crayons, 4 doz. penholders	.73	
1887.			
Jan. 4.	4 doz. writing-books, $4.80; 1 New Hampshire Register	5.05	
28.	$\frac{1}{2}$ doz. pass-books, 2 imperial pencils	.35	
Mar. 1.	6 Swinton's Geographies, $3.60; 5 doz. writing-books, 1 choice set . .	9.85	
			$69.13

BARTON & CO.

April 23.	For $35\frac{7}{8}$ yds. Tarbell flannel, $13.45; 8 yds. homespun .	$17.85	
May 5.	48 yds. cambric, $2.16; 1 skirt, 75c.; $\frac{3}{4}$ yds velvet . .	3.85	
10.	$92\frac{1}{2}$ yds. cotton, $9.25; 1 pair gloves	9.50	
Aug. 6.	$510\frac{3}{4}$ yds. shirting, $44.75; $197\frac{1}{4}$ yds. cotton . .	56.50	
Oct. 15.	$22\frac{5}{8}$ yds homespun, $12.44; $35\frac{1}{2}$ yds. gingham . .	15.11	

Oct. 28.	For 325¼ yds. shirting, $21.48; 76 yds. cambric . . .	$27.56	
Dec. 23.	13 yds. stripe goods, $1.35; 9 doz. handkerchiefs . .	10.58	
1887.			
Jan. 18.	1 portiere, $2.25; 2 poles, 46 yds. shirting . . .	6.32	
Feb. 19.	36¾ yds. flannel, 27 doz. buttons, ½ yd. cashmere . .	10.67	
			$157.94

HAWLEY & BARNARD.

Mar. 5.	For 3 rolls batting, 6 doz. hose .	$6.65	
April 22.	124¾ yds. gingham, $9.96; 40¾ yds. cotton . . .	15.88	
June 4.	100 yds. cambric remnants, $4; 1 piece netting . .	4.42	
Aug. 5.	17½ yds. scrim, $1.40; 53 yds. silesia, $4.77 . . .	6.17	
Oct. 22.	1 doz. thimbles, $4\frac{5}{12}$ doz. hose, $7.38	7.80	
	18¼ yds. crash, 142 yds cotton	10.86	
Dec. 22.	2 yds. tarlatan, 11 yds. Hamburg	.95	
	161¼ yds. print, $12.49; 33¼ yds. Lonsdale . . .	16.38	
1887.			
Jan. 25.	75¾ yds. calico, 38⅔ yds. crash	9.78	
Feb. 25.	24½ yds. damask, $12.26; 2 doz. napkins . . .	15.76	
			$94.65

CHARLES E. FOSTER.

1886.			
May 1.	For 328 gals. soap . . .	$16.20	
	Credit 147½ lbs. grease . .	5.17	
			$11.03

HIGGINS BROTHERS.

April 26.	For 4 Smyrna rugs, $15; 10 yds. cocoa matting . . .	$25.00	
	5½ yds. plush, $13.75; 7 yds. gimp	14.31	

April 27.	For 8 doz. plates, 5 doz. coffees, 1 doz. pitchers, 8 doz. mugs	$25.43	
28.	47⅔ yds. carpet and making .	38.61	
	1 rattan chair, 1 rocking chair	21.00	
	1 piece picture-wire, 1⅓ doz. screw-eyes, egg-beater .	.75	
	83¼ yds. Body Brussels carpet, making and laying . .	112.36	
May 12.	1 doz. chimneys, ½ doz. lantern-globes, slop jar . .	2.20	
July 20.	1 Knapp fixture, 3 sun wicks, ½ doz. mustard spoons .	.63	
29.	3 cov. butters, 2 doz. sauce plates, 1 gro. wicks . .	2.76	
Oct. 5.	2 doz. chimneys, 1 doz. burners, 3 doz. ind. butters .	3.34	
20.	1 doz. mugs, 2 hanging lamps, $4.75; pine table, $2.25	7.85	
1887.			
Jan. 7.	40 yds. cedar lining, $3.20; ash chamber set, $33 . .	36.20	
8.	½ doz. chimneys, ½ doz. lamps, $3; student chair, $5 .	8.40	
	3 cherry poles, 1 table, 4 window shades . . .	11.85	
Feb. 11.	15 chairs, plush cushion, cabinet	48.84	
17.	4 lamp founts and holders, 2 tin pans	1.80	
Mar. 8.	toilet set, $3.50, duplex burner and ring, basket . .	4.75	
23.	setting 24 x 14 mirror plate .	1.75	
		$367.83	
	Credit, making 244 ticks . .	36.60	
			$331.23

TALBOT & CO.

May 1.	For 1 pair overalls, 2 hats, umbrella	$3.00	
July 21.	1 suit, $5; 2 shirts, 1 lot ties, collars	7.25	

Sept. 15.	For 13 hats, $1.90; 12 pair gloves, $5; 6 caps, $3	$9.90	
Dec. 23.	6 suits, $15; 9 overcoats, $23.35	38.35	
			$58.50

DODGE & STRAW.

Feb. 13.	For 1 pair kip boots, 12 pairs rubber boots, $28.20	$30.95	
April 7.	17 pairs women's rubbers	5.61	
Dec. 22.	6 pairs boots, 1 pair rubbers	8.25	
			$44.81

TEMPLE & FARRINGTON.

1886.			
April 9.	For 16 rolls of paper, 23 yds. border	$2.98	
15.	500 envelopes, 500 letter sheets and printing	7.50	
17.	printing blanks, etc., $4; 1 gro. pens, time book	6.00	
	1 lot books, $21.86; frame	26.86	
May 14.	12 rolls paper, 20 yds. border	2.52	
June 21.	2,000 tags and printing and hooks for same	5.92	
July 22.	blank book, "Gospel Hymns," story book	3.00	
Aug. 13.	cash book, ledger, 2 time books, 1 doz. pass-books	3.34	
Sept. 23.	300 postal cards and printing, 10 sheets P. O. paper	4.12	
Oct. 4.	5 reams paper, 1 bottle mucilage	2.40	
Dec. 6.	1 journal, $3.65; 3½ doz. candle-holders	4.98	
25.	2 doz. tooth-brushes, $2; writing-desk	2.90	
Jan. 25.	1,000 envelopes, 1 ream paper	3.25	
Feb. 21.	1,500 letter sheets and printing	6.50	
			$82.27

WOODBURY & FELLOWS.

Mar. 31.	For repairs on carts, wagons, chains, etc., in March	$12.60	

April 30.	For blacksmith repairs on wheels, wagons, etc., in April .	$23.75	
May 27.	repairing whiffletrees, set tires, mending bands, chains, etc. . . .	44.55	
June 30.	repairs on chains, carts, wagons, etc., in June . .	24.25	
July 31.	making irons, yokes, mowing-machine repaired in July .	29.85	
Aug. 31.	blacksmith repairs in August	26.40	
Sept. 1.	repairing wagon, buggy, and chains	8.35	
29.	setting tires, mending axles, springs, etc. . . .	19.40	
Oct. 1.	repairing chains, making irons, staples, plates, braces, etc.	17.20	
12.	cart pole and iron work .	5.00	
31.	repairs on whiffletrees, drills, tools	1.60	
Nov. 1.	repairing chains, making bars, hooks, staples, etc. . .	10.85	
4.	1 pr. shafts, iron work . .	5.00	
29.	repairing wagons, carts, and farming tools . . .	14.70	
	horseshoeing from March, 1886, to December, 1886 .	30.25	
			$273.75

BRYANT & SCATES.

June 30.	For 1 bbl. potatoes, $3; carting	$3.15

A. A. MOORE.

July 1.	For 12 insulators	$1.20

E. M. SLAYTON.

April 1.	For 2 kegs syrup, $6.50; 94 lbs. butter, $15.66 . . .	$22.16
6.	75 lbs. lard, $4.88; 2 cases eggs, $8.55 . . .	13.43
29.	113 lbs. cheese, $11.77; 85 lbs. butter, $26.39 . .	38.16
May 4.	76½ lbs. butter, $15.90; 21 lbs. lard	17.27

May 14.	For 3 cases apples, case eggs	$11.80	
27.	369 lbs. butter	63.33	
June 2.	3 cases eggs, $15.94; 2 boxes evaporated apples, $5.20	21.14	
25.	5 bags beans, $17.70; bag C. peas, $3.08	20.78	
	64 lbs. cheese, $5.44; 60 lbs. butter, $10.20	15.64	
July 3.	1 bbl. pork, $14; case eggs, $8.11; 137 lbs. butter, $21.92	44.03	
17.	2 cases evaporated apples, $7.50; pea-beans, $18.13	25.63	
27.	1 cheese, $5.87; case of eggs	15.20	
Aug. 6.	118 lbs. butter, $21.69; 56 lbs. lard, $4.20	25.89	
17.	2 bbls. pork, $30.25; 186 lbs. butter, $27.90	58.15	
21.	4 bags pea-beans, $17.45; 48 lbs. cheese, $4.32	21.77	
Sept. 11.	36 lbs. lard	2.79	
Oct. 1.	4 bags pea-beans, $16.29; 39 lbs. lard, 132 lbs. butter	42.78	
16.	1 bbl. backs, $15.50; 2 cheeses	28.39	
Nov. 1.	159 lbs. butter, $29.32; 4 bags pea-beans	48.03	
18.	½ bbl. lard	7.00	
Dec. 14.	3 bags pea-beans, 131 lbs. butter, 53 lbs. cheese	42.78	
23.	274 lbs. turkey, $38.36; 120 lbs. lard, $8.40; case eggs	50.16	
1887.			
Jan. 26.	8 bags beans, $34.29; 36 lbs. butter, $8.28; 1 cheese	51.25	
Feb. 21.	204 lbs. butter, $36.72; 2 bags pea-beans, $8.40; case eggs	50.82	
Mar. 4.	1 bbl. pork, $18; 2 hams, $5.20; 2 cases eggs, $10.10	33.30	
23.	60 lbs. cheese, $8.70; 171 lbs. butter, $29.07	37.77	
			$809.54

MANCHESTER ONE-PRICE CLOTHING CO.

April 15.	For 3½ doz. hats, $11.56; 31 boxes collars, $2.60 . . .	$14.16	
28.	32 suits clothes . . .	145.00	
May 8.	1 zinc trunk, $3.75; 2 white shirts, $2	5.75	
Aug. 10.	3 undershirts and drawers .	1.50	
Nov. 10.	3 prs. pants, $7; 4 undershirts, $2.75; 3 prs. socks . .	10.12	
Dec. 6.	1 suit, $13.50; 2 handkerch'fs, 2 mufflers, 3 prs. suspenders	15.25	
23.	6½ doz. caps, $25; 1 hat, 2 prs. gloves	27.75	
		$219.53	
	Discount	3.96	$215.57

L. T. MEADE.

1886.			
	For Boston Daily Journal, from April 1, 1886, to April 1, 1887	$6.00	
	Manchester Daily Union, from April 1, 1886, to April 1, 1887	6.00	
	Manchester Daily Mirror, from April 1, 1886, to April 1, 1887	6.00	
	Harper's Monthly, from April 1, 1886, to April 1, 1887 .	3.60	
	Harper's Weekly, from April 1, 1886, to January 1, 1887	4.08	
	Leslie's Weekly, from January 1, 1887, to April 1, 1887 .	1.04	
	papers and magazines, April 1, 1886, to April 1, 1887 .	5.14	
June 12.	balls, bats, harmonicas .	16.95	
July 1.	lot fire-works, box crackers, balls and bats . . .	7.85	
1887.			
Mar. 23.	2 bunches envelopes, 2 bunches wrappers, blank book .	1.45	$58.11

THOMAS A. LANE.

April 14.	For 1 bath-tub and labor putting in the same . . .	$15.89	
28.	50 ft. hose, $6.00; 1 set couplings	6.25	
May 5.	14¼ ft. pipe, 3 elbows . .	5.50	
June 22.	labor and stock repairing steam pipes . . .	21.25	
Sept. 26.	steam and water piping and stock	74.11	
Dec. 31.	labor and fittings on steam and water pipes . . .	12.26	
1887.			
Feb. 16.	1 pot-trap, $16.00; steam gauge	19.50	
	labor and stock fitting dry-room in new shop . .	128.29	
		$283.05	
	Discount on stock	68.79	
			$214.26

ISAAC SWEENEY.

Nov. 1.	For drawing 125 cords wood		$132.00

R. E. WHEELER.

April 13.	For 454 lbs. beef	$36.32	
June 22.	742 lbs. beef	66.78	
			$103.10

HORACE PARTRIDGE & CO.

June 30.	For 1½ doz. balls		$13.90

CLOUGH & CO.

Mar. 12.	For 61 lbs. lard	$4.27	
June 17.	dressing and cutting 3 hogs .	4.50	
			$8.77

C. T. ALLEN.

1886.			
April 3.	For 6 qts. oysters, 6 lbs. crackers, 20¾ lbs. steak . .	$6.32	
15.	57 lbs. steak, $5.70; 6 qts. oysters, 3 lbs. crackers .	8.40	

April 23.	For 10½ lbs. halibut, $1.49; 2¼ gals. oysters, 9 lbs crackers	$5.54
May 1.	12 lbs. mackerel, 16¾ lbs. steak	3.79
21.	11 lbs. halibut, 9 lbs. lobster	2.28
24.	25 lbs. mackerel, 12 eggs	2.30
28.	10¾ lbs. steak, $1.94; 10 boxes berries	3.34
June 8.	10 lbs. mackerel, 8¼ lbs. halibut, 6½ lbs. steak	3.42
12.	10 lbs. halibut, 12 lbs. mackerel, 12 oranges	3.12
18.	16½ lbs. fish, 4 boxes berries	2.57
26.	21¼ lbs. fish, 6¾ lbs. steak	5.05
July 3.	10 lbs. halibut, 12 lbs. mackerel, 8 lbs. salmon, 4⅞ lbs. fowl	5.96
13.	6 lbs. veal steak, 14¾ lbs. beef, 7¾ lbs. halibut	4.84
17.	6¾ lbs. salmon, 23 lbs. lamb, 7¼ lbs. halibut, melon	6.93
28.	6⅞ lbs. steak, 10⅝ lbs. salmon, 2 melons	5.37
30.	6 lbs. halibut, 10 lbs. mackerel, 7⅞ lbs. steak	3.37
Aug. 6.	18¼ lbs. halibut, 9¼ lbs. lobster, 12 lbs. steak, 1 melon	6.93
14.	5½ lbs. steak, 6¼ lbs halibut, 12 melons	2.60
20.	6 lbs. halibut, 10 lbs. veal steak, 6 lbs. steak, 10 cantaloupes	4.15
27.	13⅝ lbs. halibut, 10 lbs. steak	3.47
Sept. 3.	11⅜ lbs. steak, 7¾ lbs. halibut, 12¼ lbs. chop	4.96
9.	5½ lbs. chicken, 24¼ lbs. halibut	4.78
18.	6¼ lbs. steak, 6 lbs. halibut, 3 qts. oysters, 3 lbs. crackers	3.44
25.	2 qts. oysters, 3 lbs. crackers, 7 lbs. steak	3.10
Oct. 1.	14 lbs. halibut, 9¼ lbs. lamb, 3 qts. oysters, 4 lbs. crackers	5.08

Oct.	8.	For 2⅝ lbs. chicken, 13¼ lbs. halibut	$2.70
	12.	2¼ gals. oysters, 10½ lbs. crackers	4.20
	13.	15 lbs. roast, 13½ lbs. fowl	5.79
	15.	7¾ lbs. halibut, 6 lbs. mackerel, 9¾ lbs. chop . .	3.23
	16.	3 qts. oysters, 3 lbs. crackers, 12¼ lbs. chicken . .	3.80
	18.	11¾ lbs. lamb, 6¾ lbs. steak, 16 lbs. fish . . .	4.52
	22.	6¾ lbs. halibut, 8½ lbs. cod, 3 qts. oysters, 3 lbs. crackers	2.90
	28.	13¼ lbs. chicken, 1 gal. oysters, 6 lbs. crackers . .	4.75
Nov.	5.	12¼ lbs. halibut, 10 lbs. fowl, 3 qts. oysters, 3 lbs. crackers	5.09
	10.	16½ lbs. steak, 6¾ lbs. halibut	3.81
	20.	10½ lbs. chop, 24 eggs, 15⅞ lbs. fowl	4.81
Nov.	29.	9 lbs. steak, 3 qts. oysters, 5 lbs. crackers . . .	2.90
Dec.	10.	2 gals. oysters, 5¾ lbs. crackers	3.38
	29.	2 gals. oysters, 10 lbs. crackers, 24 eggs . . .	4.52
	31.	9¾ lbs. r. beef, 7¾ lbs. halibut	3.05
1887.			
Jan.	10.	4 doz. eggs, $1.44; 27½ lbs. beef, 2 qts. oysters, 2 lbs. crackers	5.12
	15.	3 qts. oysters, 2½ lbs. crackers	1.30
	18.	30¼ lbs. turkey, 18 lbs. beef roast	9.65
	29.	5 qts. oysters, 4 lbs. crackers, 8 lbs. halibut . . .	3.72
Feb.	11.	10 lbs. halibut, $1.70; 8 qts. oysters, 5 lbs. crackers .	5.00
	25.	11¾ lbs. halibut, 2 qts. oysters, 2 lbs. crackers, 10¾ lbs. chicken	4.82

Mar. 4.	For 7 qts. oysters, 3 lbs. crackers, 6½ lbs. halibut	$3.92	
12.	2 qts. oysters, 7½ lbs. halibut, 2 lbs. crackers	2.23	
30.	2½ gals. oysters, 9½ lbs. crackers	4.45	
		$210.77	
	Credit 4 bbls. onions	11.75	
			$199.02

J. STICKNEY.

1886.			
April 7.	For 18 awls, ball twine, ¼ yd. enamel, duck	$0.70	
20.	side sole-leather, 27¾ lbs.	6.93	
May 21.	123¾ ft. leather belting, $5.54; 2 wagon cushions	8.79	
June 12.	side sole-leather, $5.88; bunch lacings, $1.25	7.13	
Aug. 4.	½ lb. shoe-thread, 3 ft. rubber tubing	.60	
Sept. 20.	1 calfskin, $2.25; qt. blacking	2.45	
23.	1 bunch leather lacings, 4 lbs. zinc nails	1.73	
Oct. 4.	bottle edge blacking, ½ doz. awls, dozen can rings	.40	
9.	side sole-leather, $6.19; shelf cloth	7.19	
18.	1 calfskin, 3 papers Swede-iron nails	4.80	
Nov. 8.	side sole-leather, 1 lb. shoe-thread, 2 papers tacks, ½ doz. wax	6.85	
Dec. 13.	1 gro. peg-awls, side sole-leather, $5	6.00	
23.	74 ft. leather belt	9.27	
1887.			
Jan. 4.	shoe-rasp, 1 gro. peg-awls, hammer, ½ doz. awl-hafts	2.65	
24.	side sole-leather, $6.15; 1 lb. lasting-tacks, 2 qts. pegs	6.50	
Mar. 23.	side sole-leather, calfskin, ½ doz. wax, 2 bunches lacings	11.06	
			$83.05

DANIELS HARDWARE CO.

1886.		
April 5.	For 1 ream sand-paper, 1 lb. drum-cord	$4.12
13.	30 insulators, $3.75; 2 chains, pr. wrought butts . .	6.95
15.	2 gals. spirits turpentine, $1.30; blind-brush . .	1.90
20.	6 hooks and staples, ½ gal. black japan and can . .	1.46
21.	1 spring-tooth harrow . .	20.00
22.	vegetable and flower seeds .	11.90
28.	35 sq. ft. netting, 43 lbs. sheet zinc, ½ lb. steel . .	5.91
May 3.	1 set tug-chains, 1 spring harrow-tooth	1.75
10.	50 lbs. lead, 1 gal. dryer and can	5.17
21.	50 lbs. cc bolts, 3 lbs. washers, 3 lbs. rope	1.40
22.	242 lbs. Bradley's phosphate, $4.60; ½ doz. hooks . .	5.10
24.	2 scythes, $1.50; 10 lbs. wire brads, 4 balls twine . .	2.50
June 12.	2 lbs. hellebore, 2 paint-brushes, 4 lbs. window-cord .	3.50
24.	46 lbs. sad-irons, $2.02; 3 razors, $1.67	3.69
July 10.	4 horse-rake teeth, $2; 3 prs. shears, 3 halters, 2 snaps .	4.10
Aug. 19.	1 bbl. plaster, $1.50; butts and screws	1.66
26.	½ doz. fiber pails, $2.25; 3 rat-traps, 2 paint-brushes .	5.10
Sept. 6.	1⅓ doz. baskets, $6.65; 2 blind-fastenings	6.81
8.	4 rolls for horse-power, Doe cutter points . . .	2.37
17.	1 belt-wheel for horse-power	7.50
27.	4 medium tracks, 1 light gr. glass	.32
Oct. 5.	freight on wheel, 1 lb. beeswax, 1 gal. asphalt . .	2.50

Oct. 23.	For 420 lbs. copperas, $4.20; 1 $4\frac{1}{2}$-ft. band-wheel	$10.70	
28.	100 ft. fuse, pr. ox-muzzles, 2 whips	1.60	
Nov. 16.	1 chamois skin, 3 set blind-hinges, 1 gro. screws	1.08	
18.	1 plow-bolt, chain, butts and screws, 2 locks	.55	
24.	2 gals. sperm-oil, 12 lbs. putty, 1 paper points	3.54	
27.	1 box glass, 4 tie-chains, butts, hinges	4.86	
Dec. 4.	1 gro. screws, $1\frac{3}{16}$ lbs. rubber packing, 1 light glass	.86	
10.	1 doz. hooks, $\frac{1}{4}$ lb. wire, hinges, 2 gro. screws	3.05	
25.	1 pt. coach varnish, brush, $\frac{1}{2}$ pt. glue, truck	2.85	
		$134.80	
	Credit 2 wheels	12.00	
			$122.80

MANCHESTER HARDWARE CO.

1887.			
Jan. 3.	For keg of nails, $2.50; 2 feather dusters, $3; 3 files	$5.81	
4.	4 doz. bolts, $10\frac{3}{4}$ lbs. steel wedges, $4\frac{3}{4}$ lbs. cotton line	3.07	
26.	1 whiffletree and chain, Dow bolt, $\frac{5}{16}$ lbs. wire, paper nails	1.95	
Feb. 5.	7 tie-chains, 1 halter, 1 lock, 10 lbs. nails, screws, staples	3.69	
Mar. 8.	2 papers tomato seed, 1 pocket-knife, 2 locks	.80	
22.	53 lbs. lath yarn, $5.30; 2 gals. neat's-foot oil, $2	7.30	
	$\frac{1}{2}$ doz. hammer-handles, 1 halter, 1 chain, 1 sponge	.95	
24.	2 whip-sticks and lash, $14\frac{1}{2}$ lbs. steel wedges, 5 lbs. wire	1.91	
30.	1 lb. brads, 1 gro. screws, 2 paint-brushes, 3 axes and handles	2.77	

Mar. 31.	For 2 lbs. Pr. blue, 2 lbs. C. black, 11 blind-hinges	$1.60	
	1 gro. screws, burrs	.20	$30.05

G. W. DODGE.

1886.			
April 27.	For 51 prs. shoes, $58.75; lacings, $1.50	$60.25	
June 10.	13 prs. shoes, $12.50; 3 hammocks, $3.30	15.80	
July 20.	8 prs. shoes, $15.60; 3 prs. girls' boots	18.80	
Sept. 14.	25 prs. boots and shoes	34.75	
Oct. 18.	12 prs. kip boots, $33; 2 prs. shoes, $3.50	36.50	
Dec. 23.	8 prs. slippers, 1 pr. shoes, 1 pr. boots	8.00	
1887.			
Feb. 19.	4 prs. rubber boots, $12.19; 1 pr. arctics	13.19	
22.	2 prs. slippers, $1.25; 1 pr. button boots, $1.25; lacings	3.50	
Mar. 18.	18 prs. boots and shoes	20.75	$211.54

ALBERT J. SAWYER.

1885.			
Nov. 11.	For 103 ft. hemlock, 133 ft. pine, 115 ft. bass boards	$46.41	
Dec. 31.	1,117 ft. spruce, planed and matched	16.26	
1886.			
Mar. 29.	2,128 ft. hard-wood flooring	98.25	
April 9.	70 posts, 65 ft. 7x7	12.90	
June 18.	341 ft. spruce, 135 ft. chestnut	8.49	
25.	276 ft. spruce, 65 ft. oak, labor	7.09	$189.40

O. P. WILSON.

Aug. 5.	For 60 qts. blueberries, $3; 12 gals. vinegar, $1.80		$4.80

L. D. COLBY.

July 3.	For 4.382 tons gravel		$12.75

CLARK & ESTEY.

April 7.	For 10 harmonicas, $1.59; 1 doz. balls	$2.50	
24.	3 skeins yarn, 1 doz. hose, $1.20	1.85	
27.	1½ doz. spool cotton, $1.19; girl's hat, $2.50 . . .	3.69	
June 15.	4 papers needles, 1 gro. buttons	.19	
July 1.	18 doz. spool cotton, $9; 24 gro. buttons, 1 doz. papers pins	9.92	
31.	3½ doz. harmonicas, $1.67; elastic	2.59	
Aug. 10.	1 doz. shirts, $2.50; 6 doz. hose, $6.29; cloth . .	9.29	
16.	16 skeins yarn, $1.12; 12 doz. spool cotton, $6; 2 hats, 55c.	7.67	
Sept. 27.	8 doz. combs, $2.64; 5 balls, $1; crochet hook . .	4.00	
Oct. 4.	17 doz. buttons, 85c.; 6 doz. spool cotton, $3; pins .	4.79	
20.	15 boxes collars, $1.13; 4 prs. socks, 2 undervests . .	4.09	
Nov. 9.	11½ cards buttons, $1.03; 3 spools twist, 7 harmonicas	1.97	
Dec. 22.	mittens, gloves, scarfs, bows, 9 prs. skates . . .	29.91	
	7 pcs. ribbon, $11.50; 2 doz. collars, $2.30; 2½ yds. tarlatan	14.17	
	13 doz. handkerchiefs, 2 doz. boxes paper . . .	14.35	
	games, books, scissors, vases	8.32	
1887.			
Feb. 10.	9 doz. combs, $2.92; 2 doz. papers pins, 33 pa. needles	4.53	
Mar. 3.	18 doz. spool cotton, $9; braid, twist, thimbles .	9.51	$133.34

KILLEY & WADLEIGH.

1886.			
April 12.	For 2 axes and handles, $2; paper tacks, 6 hooks . .	$2.21	
May 17.	½ ton Stockbridge . .	21.25	
18.	vegetable seeds, $1.83; 2 lbs. twine, knob and latch .	2.34	
20.	16-in. lawn-mower . .	11.00	
June 7.	11 lbs. nails, 55c.; ball twine, 20c.; 3 gro. screws . .	1.32	
30.	1 qt. vermilion, $1; 10 lbs. Paris green, $2.20; bolts .	3.38	
July 1.	1 whip, brass box, 2 sprinklers	3.00	
5.	½ doz. brush-brooms, $1; 6 lbs. bird-seed . . .	1.36	
Aug. 3.	mill files, whip-stock and lash	.65	
9.	½ doz. halter-snaps, 1 gal. sperm-oil	1.67	
28.	12½ lbs. steel bar, 2 shovels	2.50	
Sept. 24.	½ bushel timothy seed, $1.38; 2½ doz. lights glass . .	2.57	
Oct. 19.	6 lbs. putty, wood-saw and buck, 1¼ lbs. packing .	2.12	
	2 gals. turpentine, 1 gal. dryer, glass	2.30	
			$57.67

J. H. WIGGIN & CO.

April 2.	For 330 lbs. gr. sugar, $23.10; 22 lbs. coffee, $5.80 . .	$28.90
8.	5 lbs. sulphur, yeast, 2 lbs. saltpeter	.75
21.	1 bag salt, blacking, 2 blacking-brushes . . .	1.60
28.	25 lbs. coffee, $6.25; 340 lbs. gr. sugar, $25.50 . .	31.75
May 4.	2 lbs. cloves, 2 lbs. bird-seed	.84
6.	118 lbs. fish, $5.62; 10 lbs. steak, $1.50; 5 lbs. ham .	7.62
11.	$2\frac{11}{16}$ lbs. cheese, 43c.; 2¼ lbs. c. beef, 19c.; crackers .	.86
14.	12 lbs. cream tartar, $4.50; 3 doz. eggs, 2 bags salt .	6.58

May	28.	For 40 lbs. coffee, $7; 347 lbs. y. c. sugar, $22.13	$29.13
	29.	75 bbls. flour	408.75
June	7.	5 lbs. starch, $1; 27 lbs. insect powder	9.45
	10.	40 lbs. cod, $2.60; 1 gal. vinegar and jug	3.05
	12.	330 lbs. gr. sugar, $23.10; 10 lbs. sulphur	23.60
	14.	38 gals. molasses, $11.78; 1 doz. bean-pots, $3; matches	14.90
	25.	6 lbs. pul. sugar, 54c.; 12 lbs. cassia, $3	3.54
	26.	11 lbs. coffee, $2.75; 331 lbs. gr. sugar, $23.17	25.92
	28.	1 lb. Baker's chocolate, 2 lbs. des. cocoanut	1.02
July	1.	1 bbl. gr. sugar, $16.56; box starch, $3.25	19.81
	10.	50 lbs. rice, $4; 85 gals. molasses, $26.35	30.35
	19.	2 bags salt, $1.60; 341 lbs. y. c. sugar	21.63
	28.	½ doz. brooms, 355 lbs. sugar	23.94
Aug.	20.	10 bags T. I. salt, $15; 25 lbs. coffee, $3.65	18.65
	28.	45 gals. c. vinegar and cask, 112 lbs. fish, $4.48	12.48
Sept.	8.	13 lbs. coffee, $1.77; 348 lbs. y. c. sugar	22.22
	13.	1 box starch, $3; ½ doz. shoe-black, 5 lbs. coffee	4.80
	24.	10 bbls. flour, $54.50; box soap, $4.62; tea, $1.80	60.92
Oct.	1.	6 lbs. cream tartar, $2.25; 3 doz. eggs, 20 lbs. lard	4.83
	8.	1 hhd. molasses, $32; 4 lbs. tea, 3 lbs. coffee	34.35
	20.	1 bbl. sweet potatoes, $1.75; 332 lbs. gr. sugar	23.75
		395 lbs. y. c. sugar, $21.73; 64 lbs. tea, $15.55	37.28

Oct. 21.	For 49 gals. syrup, $19.60; 55 lbs. crackers, $3.05; 25 lbs. coffee	$25.81	
29.	1 box salt, ¼ gro. matches, 2 boxes soap, 2 bags T. I. salt	8.34	
Nov. 23.	28 lbs. seedless raisins, $2.24; 41 lbs. crackers	4.66	
25.	1 box. cream tartar, $11.79; 2 doz. eggs, box raisins, $1.50	13.95	
Dec. 3.	3 bags T. I. salt, $2.25; 27 lbs. coffee, $7.10; matches.	9.97	
9.	1 bbl. y. c. sugar, $18.98; 12 doz. wicks, 50 lbs. soap	21.38	
Dec. 23.	1 box candles, 1 doz. gelatine, 10 lbs. pulverized sugar	3.20	
31.	1 bbl. granulated sugar	20.22	
1887.			
Jan. 1.	48 lbs. crackers, $2.64; 40 lbs. starch, $2.60; 5 doz. eggs	6.89	
22.	30 lbs. coffee, $3.50; 58 lbs. tea, $11.02; 2 bags salt	16.12	
29.	49 gals. syrup, $19.60; 11 lbs. insect powder	23.78	
Feb. 4.	331 lbs. y. c. sugar, $19.03; 12 lbs. coffee, 10 lbs. steak	21.73	
26.	1 bag salt, 1 doz. eggs, 12 lbs. cream tartar, $3.60	4.68	
	1 box soap, $4; 112 lbs. fish, $5.60; 100 lbs. rice, $7	16.60	
Mar. 3.	328 lbs. granulated sugar, $20.50; 1 bbl. crackers, $2.84; 1 lb. beeswax	23.59	
12.	2 boxes pepper, $4.80; 1 bbl. apples, $3; 20 lbs. coffee, $6	13.80	
14.	2 qts. oysters, 3 lbs. crackers, 35 lbs. coffee, $5	5.96	
19.	1 bbl. flour, $5.75; 1 bushel beans, $1.90; 20 lbs. lard, $2	9.65	
21.	405 lbs. y. c. sugar, $22.58; 2 lbs. tea, $1; 7½ lbs. steak	24.71	
28.	salt, $1.37; nutmegs, 90 cts.	2.27	
			$1,190.58

PARTRIDGE BROS.

1886.			
April 17.	For 8 bags cr. corn, $8.40; 7 bags meal, $7.35 . . .	$15.75	
June 28.	11 bags oats, $11.10; 5 bags c. corn, $5	16.10	
July 6.	8 bags c. corn, $8; 4 bags meal, $4; 980 lbs. bran .	21.80	
23.	5 bags meal, 6 bags c. corn, 4 bags oats, 2,000 lbs. bran, 1 bushel feed . . .	34.30	
Aug. 9.	11 bags oats, 11 bags c. corn, 1,600 lbs. bran . . .	40.25	
Sept. 25.	12 bags c. corn, 1,825 lbs. bran, 10 bags oats, 6 bags meal	48.55	
Oct. 28.	9 bags oats, 9 bags cr. corn, 7 bags meal, 975 lbs. bran .	36.30	
Nov. 26.	3 bags meal, 3 bags oats, 6 bags cr. corn . . .	12.45	
Dec. 18.	18 bags cr. corn, 8 bags meal, 1 cask lime . . .	30.00	
1887.			
Jan. 10.	7 bags oats, $7; 5 bags cr. corn, $5.75; 600 lbs. bran, $6.30	19.05	
20.	5 bags oats, $5; 5 bags c. corn, $7.95 . . .	12.95	
Feb. 5.	5 bags meal, $5.50; 5 bags c. corn, $5.50; 7 bags oats, $7	18.00	
Mar. 30.	4 bags c. corn, $4.30; 2 bags meal, $2.10; 5 bags oats .	11.15	
			$316.65

R. D. GAY.

1886.			
May 28.	For curtain, $1; cord and tassel .	$1.58	
	56 rolls paper, 96 yds. border	16.30	
Jan. 3.	24 rolls paper, 48 yds. border	8.96	
	hanging paper and painting .	7.20	
			$34.04

PIKE & HEALD.

April 1.	For 1 ash mouth, $1.25; sink-strainer, 2 iron pails, $1 .	$2.35	
21.	labor and stock repairing water pipes	3.80	
24.	12 Doherty bibbs . . .	27.50	
May 8.	4-part soapstone trays and labor	49.50	
18.	ladle, dipper, spider, toaster, 10 tins for machines . .	2.47	
31.	2 milk-pails, 2 pans, skimmer, strainer	1.37	
June 10.	½ bushel charcoal, tinning coppers, 10 pc. iron . .	.85	
	lead pipe, labor and stock repairing water-works . .	31.96	
Sept. 1.	6 dust-pans, oil-can, tunnel, box clothes-pins . .	2.58	
Oct. 8.	damper-rod, leathering pump-box	1.15	
15.	12 irons for knitting-machine, $3.30; 25-gallon kettle .	7.30	
21.	tin strainer, oiler, impetus valve, 2 bolts . . .	4.83	
29.	self-closing bibb, 2 clothes-lines	2.90	
Nov. 12.	waste-pipe, 17½ lbs. lead pipe	1.99	
24.	4 drip-pans, 6½ Russia pipe, damper	3.75	
Dec. 11.	2 soapstone wash-trays, $45; labor	52.75	
			$197.05

CAVANAUGH BROS.

April 21.	For 1 express harness, $37.50; 1 pr. team harnesses, $65 .	$102.50	
	stabling horses, $1.25; curry-comb, 25c.; harness repairs	1.75	
May 22.	⅙ doz. halters, $1.50; harness, $43.50; mat, $2.25 . .	47.25	
27.	cleaning and oiling harnesses, $1.25; 1 front . . .	1.75	

June 24.	For horse keeping . . .	$0.50	
Aug. 24.	1 whip, $1.75; harness repairs, $2.50 . . .	4.25	
Nov. 10.	2 trunks, $4.20; 4 fawn blankets, $18; whip-socket .	22.45	
29.	4 yoke-straps, 2 lead straps, 1 surcingle	3.00	
Dec. 3.	1 pr. tug-straps, 2 blankets, $9; ½ doz. leather sweat-collars	10.90	
4.	4 yoke-straps, 1 pr. breeching-straps, 5 rings . . .	5.98	
15.	1 harness	17.50	
1887.			
Jan. 3.	2 halters, $2; 2 surcingles, $1.50; 2 halter-ropes . .	3.86	
19.	repairing hame, 1 whip, $1 .	1.35	
			$223.04

DENNIS KERWIN.

1886.		
Feb. 26.	For killing three hogs	$3.75

CARL E. YORK.

April 10.	For 12 lbs. crackers, 1 doz. stove polish	$1.27
May 27.	5 lbs. tea, $1.10; 42 lbs. haddock, $2.10; 10 lbs. halibut	4.64
31.	4 lbs haddock, halibut, 10 doz. eggs	5.32
June 1.	30 doz. eggs, $3.90; 48 lbs. tea, $10.56; 12 lbs. crackers	15.18
17.	10 lbs. pork, 8 lbs. veal . .	2.40
July 5.	½ box lemons, $3.63; 14 lbs. candy, $1.54; 23 lbs salmon	10.92
7.	435 lbs. beef, $32.63; 233 lbs. sugar, $15.73; raisins .	50.36
10.	8 mackerel, $1.10; 24 lemons, 90c; 11 lbs. salmon . .	3.75
21.	24 bananas, 2 melons, berries	1.60
31.	11 lbs. beef roast, $2.20; 12 lemons, melon . . .	3.00

Aug. 2.	For 11¼ lbs. steak, $1.85; 6½ lbs. halibut, 91c.; melon	$3.31	
14.	244 lbs. sugar, 1 box soap, $4.50; 5 lbs. halibut, 70c.	27.89	
17.	5 lbs. veal steak, $1; peaches, grapes, pears	1.75	
28.	10 lbs. sweet potatoes, 13 lbs. crackers	1.13	
30.	2 baskets peaches	3.75	
Sept. 24.	6 lbs. steak, 10 lbs. coffee, 3 lbs. tea, 12 lbs. halibut	4.97	
Oct. 2.	10¾ lbs. fowl, $2.20; oysters, 4 lbs. crackers	3.95	
23.	227 lbs. sugar, $14.76; 6 lbs. sausage, 13½ lbs. beef, $2.42	17.78	
Nov. 13.	19½ lbs. fowl, $3.22; 1 bag salt, 3 doz. boxes bluing	6.11	
19.	1 box raisins, $2.20; 1 Bristol brick, 10 lbs. halibut, $1.50	4.12	
20.	52 gals. molasses, $20.80; 50 gals. vinegar	27.80	
23.	10 lbs. coffee, $3; 19 lbs. fowl, $2.38; 15 lbs. dressing	7.23	
24.	6 lbs. pepper, $1.44; duck, $1.60; hod	3.46	
Dec. 6.	6 lbs. cream tartar, $2.22; 1 gal. oysters, $1.30; 5 lbs. crackers	4.02	
23.	18½ lbs. chicken, $2.59; 5 gals. oysters, $6.50; 45½ lbs. crackers	11.60	
		$227.31	
	Credit 26$\frac{7}{10}$ bushels potatoes	13.00	$214.31

FREDERICK C. DOW.

May 22.	For 25 prs. girls' slippers	$20.65	
Dec. 7.	29 prs. girls' boots, $38; 4 prs. men's boots, $9.10	47.10	
1887.			
Mar. 16.	6 prs. boots and shoes, $6.66; 3 prs. slippers	8.73	$76.48

FLEISCHMANN & CO.

For 104 lbs. compressed yeast from April 1, 1886, to April 1, 1887 . . . . . $36.40

JOHN B. VARICK CO.

1886.		
Mar. 31.	For 1 doz. brooms, $2.75; 1 speed indicator, $1.50 . . .	$4.25
April 1.	3 brushes, 2 razors, 2 doz. harness hooks . . .	1.91
5.	2 doz. screw-eyes, 3 gim. bits, 2 chamois skins . . .	2.26
9.	2 lawn-rakes, 1 trowel, 1 hank cod line	1.65
	1 floor-brush, $2; 1 light dbl. glass	2.47
12.	$\frac{1}{2}$ doz. whitewash brushes, $6; paint, putty, and whiting .	7.41
13.	1,000 lbs. X. L. phosphate .	19.00
	1 hammer, 1 wrench, 2 pr. butts, 1 rope halter . .	1.26
15.	1 qt. Le Page's glue, 2 paint-brushes, 100 bolts . .	3.19
16.	1 sink, $1.60; 2 doz. stable brooms, $1; 1 rake . .	3.48
19.	7$\frac{2}{9}$ bushels timothy seed, $17.15; 1 doz. brooms, $2.75	19.90
	1 bag, $\frac{1}{2}$ doz. curry-combs, $\frac{1}{2}$ doz. mane-brushes . .	2.25
	2 whips, 1 cask nails, $2.60; 1 halter, 1 lock . . .	4.52
21.	1 turf-cutter, 11 lbs. paint, $1.35; 100 lbs. white lead, $7.50	9.47
22.	1 box harness blacking, adze and handle, sash tool . .	2.70
	1 bull-ring, barbed-wire stretcher, 1 gro. screws .	1.25
23.	12 lbs. hinges, 1 lb. grafting-wax, turning-gauge . .	1.82
	turning-chisel, 6 lights glass, 1 doz. brackets . . .	2.25

April 24.	For ⅔ doz. hoes, $2.33; brush, 1 paper glazed points . .	$3.09
26.	1 gal. shellac, $2.50; plow point, milking-tube . .	3.75
	50 lbs. white lead, $3.75; 1 qt. varnish, 1 pr. hinges .	4.62
27.	1 qt. asphaltum, can, wire brads	.63
	set of knives and forks, $3; 2 rules, 1 gal. turpentine .	3.95
28.	1 gal. asphalt and can, 3 papers carpet-tacks . .	1.38
30.	¼ doz. scissors, manure-fork .	1.56
May 4.	milking-tube, 50 washers, 1 light glass	1.07
7.	Billings corn-planter, $15; 20 lbs. nails	15.60
11.	vegetable seeds, $9.52; 1 pr. pruning-shears . . .	10.02
15.	1,095 lbs. X. L. phosphate, $20.80; 109 lbs. lath yarn .	30.06
20.	2 whip lashes and 4 stocks, $1.20; scythe, stone, rifle .	2.05
27.	3 picks and handles, $2.70; lock, screws, hooks, chain	5.11
June 1.	1 gal. neat's-foot oil, $1.10; 36 sq. ft. wire cloth, $4.32; 1 light glass . . .	5.67
14.	150 ft. rubber hose and nozzle, $15.60; ½ doz. drills, $1.67	17.27
19.	1 cask nails, $2.40; carpet-stretcher, lantern . .	3.70
22.	1 quire sand-paper, 6 boxes cartridges, 1 gro. screws .	1.85
	5 gals. sperm-oil, $6; 24 sheets emery cloth . .	6.96
June 25.	1 doz. scrub-brushes, 2 whisk-brooms, coupling and wire	2.15
28.	1 doz. rakes, 3 hay-forks, 2 files, bolts, and washers .	6.40
July 1.	8 lbs. phosphate, bolts, butts, 2 doz. rake-teeth . .	.92

July	5.	For ½ doz. stable pails, 1 steel scythe, m'tse, lock	$2.85
	10.	1 ice-cream freezer, 1 keg nails, 2 lights glass, hooks	5.49
	20.	35 lbs. lead pipe, 4 fly-traps, 2 wheelbarrows	12.10
Aug.	6.	2 halter-snaps and chain-links, 2 doz. brooms	6.20
	9.	grass and clover seed, $9.12; bellows, 1 slip	10.24
	30.	1 doz. shoe-knives, 1 file, bolts, 3 prs. scissors	2.70
Sept.	4.	15 bottles garget cure, $5.63; 2 baskets, 24 screws	6.88
	8.	1 mould-board, $2.75; 3 lbs. twine, 6 papers tacks	3.82
	13.	2 gals. lard-oil, 2 lbs. Mars. green, paint-brush	2.14
	17.	24 lights glass, 2 bags needles, 2 whip-stocks	2.06
	20.	1 pr. bow-pins, 3 plow points, 1¾ lbs. wedges and shims	2.05
	21.	1 truck, $2.25; 3 prs. ox-balls, 1 quire sand-paper	2.75
	22.	2 doz. Ward plow points, 10 sets blind-fastenings	2.10
	23.	3 doz. wardrobe-hooks, 1 lock, screws, brads	.95
	25.	1 set cattle-knobs, $2.25; 1 pr. door-hangers	3.05
	27.	1 bbl. paraffine oil, $8.71; 2 wooden faucets	8.87
	28.	10 lbs. rope, 6 cattle-cards, rings, staples	2.20
		1 shovel, 1 fork, ⅓ doz. brushes	2.36
Oct.	4.	2 butcher knives, 1 belt-punch, ¼ doz. belt-punch tubes	1.80
	5.	1 whip stock and lash, 1 gro. screws, 4 oz. steel wire	.76
	6.	50 gals. cylinder oil, $32.50; 12 lights glass	33.10
	8.	6 twist drills, 2 qts. paint, 3 lbs. wire, 1 doz. saws	2.23

Oct.	25.	For 2 combs, 2 prs. gas-pliers, 1 pr. calipers	$2.19
Nov.	2.	1 doz. lead-pencils, 1 gro. screws, 1 mould-board .	3.43
	5.	$8\frac{5}{9}$ bushels grass seed, $19.68; 3 lbs. blasting-powder, 3 bags	20.82
	9.	3 files, 1 hammer, 6 lights glass, 1 tape measure .	2.45
	13.	1 lb. rivets, bolts, 1 doz. blind-hooks, 1 b. d. hanger .	1.14
	15.	1 plow point, 20 ft. weather-strip, $1.04; 12 lights glass, $1.08	2.77
	24.	5 gals. sperm-oil, $5.60; 2 gals. neat's-foot oil, $2; 1 can, screws	8.51
Dec.	6.	15 lbs. cable chain, $1.05; flue-cleaner, $1.50; 2 ax-handles	3.05
	8.	Blanchard churn, $5.50; 6 lights glass	5.80
	9.	1 set shaft-bells, 1 pr pliers, 2 twist drills	2.18
	11.	4 files, team bells, 27 prs. skates, $21.45 . . .	22.59
	18.	1 doz. sleds, $5.50; Stubbs steel, 12 sheets emery cloth	6.45
	23.	$1\frac{3}{4}$ lbs. braided wire line, 2 hammers, 2 balls twine .	1.95
	27.	2 doz. screws, 1 doz. brooms, $2; coal-sifter . . .	2.71
		$\frac{1}{2}$ doz. pails, 1 clothes-line, bolts, 2 prs. pliers . .	2.76
Aug.	19.	$253\frac{1}{2}$ lbs. lead pipe . .	15.18
1887.			
Jan.	1.	$2\frac{1}{2}$ lbs. washers, $\frac{1}{2}$doz. awls, $\frac{1}{2}$ doz. handles, 10 lights glass	1.71
	3.	4 doz. shoe-knives, 1 apple-parer, 2 bells . . .	5.30
		159 lbs. S. S. steel, 48 lbs. Nor. iron, $\frac{1}{2}$ lb. nuts . .	6.19

Jan.	6.	For 12 bolts, 1 lock, 1 scoop, 1 shovel, 50 lbs. Salem lead .	$6.13
	7.	12 lbs. team bells, 10 lbs. ref. iron, 6 doz. papers tacks, 1 doz. scrub-brushes .	2.68
		1 doz. wash-boards, ½ doz. pails, 2 axes and handles, box glass	8.36
		10 lbs. ref. iron, 4 lbs. Nor. iron, ½ lb. nuts . . .	.48
		2 gals. lard-oil, $1.40; 6 sad-irons, $1.12; meat cutter .	5.02
	17.	1 gal. alcohol, $2.50; barn-door rollers, 1 doz screws .	2.86
	19.	2 prs. hinges, 3 whistles, 10 union bolts, 1 wood rasp .	1.67
	29.	copper wire, 7 lbs. band iron, ½ doz horse-cards . .	.76
Feb.	2.	1 box glass, $2.50; 1½ lbs. sash-cord, 50 lbs. Phœnix lead, $3.25	5.99
		25 lbs. putty, 1 lb. lamp-black, 10-quart galvanized iron pail	1.20
	5.	2 papers tacks, 1 gro. screws, 1 light gr. glass . . .	.66
	8.	50 lbs. steel brads, $2.50; 3 bits, ½ doz. wire pulleys .	2.92
	9.	1 lb. trunk-nails, 5 gals. cylinder oil, $3	3.10
	15.	1 wringer, $3.50; 50 coach-screws, 1 gro. screws . .	4.59
	28.	2 gals. neat's-foot oil, $2; 1 light glass	2.12
Mar.	1.	set casters, 2 halter-thimbles, 3 gals. paraffine oil . .	.97
	2.	1 light glass, 1 pr. hinges and screws, 5 gro. clothes-pins, $3	3.23
	11.	1¼ gro. screws, 6 sheets sand-paper, 2 mane-brushes .	1.34
	21.	53 lbs. lath yarn, $5.04; ⅙ doz. paint-brushes . .	5.75

Mar. 24.	For 2 5-tined manure-forks, $1.50; ½ doz. gloss-brushes, $2.38	$3.88	
	100 lbs. Phœnix lead, $6.50; plant-food, 1 light glass	6.82	
	100 lbs. med. Mars. green, 16.50; 1¼ doz. paint-brushes	17.55	
29.	5 gals. raw oil, 2 gals. japan and cans	5.75	
	22 ft. belting, 1 doz. sheets sand-paper	1.94	
		$548.50	
	Credit 48⅔ gals. paraffine oil	8.71	
			$539.79

HUTCHINSON BROS.

1886.			
April 16.	For 1 oil lubricator	$12.00	
	repairs on engine and machines in April, May, and June	16.55	
Sept. 10.	stock and labor on boiler	47.02	
1887.			
Feb. 25.	35 grates for boiler	41.13	
			$116.70

HEAD & DOWST.

1886.			
April 7.	For 622 ft. chestnut, $18.81; 22 ft. maple, 77c.	$19.58	
22.	104 ft. Canada pine, $2.60; labor laying floors, etc.	56.60	
			$76.18

JOHN E. TOWLE & CO.

April 27.	For 344 lbs. ham, $34.40; 76 lbs. lard, $5.69; 35 lbs. salt pork	$42.37	
Oct. 8.	14 lbs. salt pork	1.10	
			$43.47

WILLIAM H. VICKERY.

For repairing locks and keys from April, 1886, to March 28, 1887	$7.07

I. S. YORK.

	For repairing harnesses from April to December 31, 1886		$8.80

LEWIS K. MEAD.

April 1.	For 1 bottle acid phosphate, 85c.; catheter, 25c.	$1.10	
July 6.	¼ lb. sugar of lead, 1 lb. chlo. potassa	.65	
Oct. 5.	Fellows' syrup, $1.25; 3 prescriptions	2.45	
18.	prescriptions, $1.30; Fellows' syrup, $1.25	2.55	
1887. Mar. 4.	1 syringe, $1.50; Shaker Sarsaparilla, $1	2.50	
			$9.25

C. H. KIMBALL.

1886. April 10.	For repairing drum, $2.50; harmonicas and triangle, $5.35; 6 octavos		$8.33

E. T. JAMES.

	For hitching in horses		$5.25

WILSON & RAND.

June 8.	For 191 lbs. beef	$22.92	
1887. Feb. 10.	609 lbs. beef	46.91	
			$69.83

CONCORD RAILROAD CORPORATION.

	For freight from April 1, 1886, to March 7, 1887		$264.02

MANCHESTER HORSE RAILROAD.

	For manure of sixty horses nine months		$264.02

DE WOLFE, FISKE & CO.

1886. July 1.	For 23 volumes for library, from Miss Louise Penhallow fund	$20.12	
	20 volumes for library, from Mrs. Nathaniel White	15.00	
			$35.12

GEORGE O. BAILEY.

July 3.	For 1 yoke oxen		$170.00

L. A. CLOUGH.

June 2.	For 153 cords wood, $315.28; surveying, $2	$317.28	
Nov. 26.	1 lot wood and lumber on Stark lot	32.00	
1887. Jan. 1.	112½ cords wood	254.95	$604.23

WALKER & PRATT MANUFACTURING CO.

1886. June 30.	For 1 laundry stove	$18.00

R. M. PULSIFER & CO.

Nov. 2.	For advertising in "Boston Herald"	$11.13

LYNCH & WILLEY.

July 20.	For 110 trout	$11.00

C. HARDEN.

July 20.	For copy "Picturesque Washington"	$3.50

JAMES H. HUNT.

July 27.	For arresting John Powers	$20.00

J. HORACE KENT.

	For traveling expenses to six trustee meetings	$13.80

CHARLES SCRIBNER'S SONS.

Aug. 2.	For 2 vols. Greely's "Three Years of Arctic Service"	$10.00

C. F. BONNEY, M. D.

	For professional attendance on inmates from Oct. 16, 1885, to Jan. 1, 1886	$5.50

CHARLES H. BUNTON.

	For shoeing oxen from May to Nov. 24, 1886	$14.75

JOHN P. THOMAS & CO.

Aug. 2.	For 12 prs. men's canvas bals., $9; bunch leather lacings	$10.00	
	18 prs. rubbers	4.95	
			$14.95

B. F. MARSH.

Aug. 24.	For 56 lbs. lamb	$6.72

C. A. WHITTEMORE & CO.

Aug. 21.	For 1 Whipple spring-tooth harrow	$20.00

O. H. A. CHAMBERLIN.

	For "Analecta" from June, 1886, to June, 1887	$1.00

A. A. LEWIS.

Aug. 28.	For tuning instrument	$2.00

FARNUM & CO.

Sept. 1.	For 1 bbl. sweet potatoes	$2.25

J. A. HARRINGTON.

Aug. 31.	For 24 straw hats	$6.40

J. H. CRAM.

	For shoeing horses in April and May, 1886	$2.00

WHEELER & WILSON MANUFACTURING CO.

Sept. 9.	For sewing-machine	$65.00	
	Discount	30.00	
			$35.00

PATRICK DONOHUE.

July 29.	For 14 days' work haying	$14.00

ALBE M. SMITH.

Sept. 10.	For 4 barrels apples, $3; 2,765 lbs. meadow hay, $9.67	$12.67

WESTERN UNION TELEGRAPH CO.

	For telegrams from March 5 to Sept. 9, 1886 .		$2.02

L. A. VERVILLE & CO.

Nov. 18.	For 7 loads of stone		$7.00

J. A. BURLEIGH.

Aug. 14.	For 1 Tubbs & Humphreys seamer . .		$80.00

MAST, FOOS & CO.

July 15.	For exchange in windmills		$40.00

J. M. & D. A. PARKER.

April 13.	For 3,000 ft. oak plank, $45 ; 7¼ cords wood, $20.83		$65.83

AMERICAN SHORT-HORN BREEDERS' ASSOCIATION.

Sept. 25.	For Vol. 20, American Herd-Book . . .		$7.00

J. H. PIERCE & CO.

Aug. 19.	For 52½ gals. molasses, $17.33 ; 2 boxes soap, $6.75 ; 100 lbs. codfish	$27.08	
Dec. 11.	101 gals. syrup . . .	35.35	
			$62.43

J. W. LEWIS & CO.

Sept. 4.	For History of Merrimack and Belknap counties		$12.50

MOORE & PRESTON.

Sept. 2.	For 5,461 lbs. egg coal . .	$18.16	
Oct. 23.	2,725 lbs. egg coal . .	8.85	
Nov. 24.	9,920 lbs. egg coal . .	32.24	
			$59.25

SANBORN CARRIAGE CO.

April 3.	For painting top buggy, $12 ; repairs, $2.85	$14.85	
	wagon and carriage repairs in July and August . .	10.85	
			$25.70

GEORGE E. HALL.

1885.			
July 18.	For subnitrate bismuth, 85c.; 1½ lbs. sugar of lead	$1.43	
	chloride lime, shaving-brush, comb and razor	.80	
1886.			
Jan.	8 prescriptions	3.95	
June 18.	powders and liniment for horses	2.05	
Sept. 10.	medicine for ox, $2.50; 3 prescriptions	4.40	
Oct. 6.	8 oz. fir balsam, 1 lb. sulphur and niter	1.25	
Dec. 10.	5 prescriptions, $2.45; bottle Boschee's syrup	3.10	
			$16.98

HORACE MARSHALL.

Dec. 7.	For 178 lbs. butter	$29.64

O. H. UNDERHILL.

Aug. 18.	For 1 yoke oxen	$165.00

JAMES R. CARR.

Oct. 8.	For 100 lbs. lead	$7.50

ELBRIDGE HILL.

Aug. 4.	For 466 lbs beef	$37.28	
18.	16 bushels apples, $10; 476 lbs. beef, $33.32	43.32	
Sept. 3.	30 bbls. apples, $30; 3 bushels pears, $4.25	34.25	
27.	568 lbs. beef, $42.60; apples and pears, $3.20	45.80	
Oct. 4.	2 bbls. pears, $5; 31½ bbls. apples, $39.38	44.38	
Dec. 1.	889 lbs. beef	57.78	
Jan. 18.	71 chestnut posts, $8.52; 390 lbs. beef, $27.30	35.82	
Mar. 9.	414 lbs. beef, $28.98; 59½ bbls. apples, $73.20	102.18	
	2 M hard-pine edged plank	35.00	
			$435.81

L. M. FRENCH, M. D.

For professional attendance on inmates from June 5, 1886, to March 1, 1887 . . .		$62.00

N. C. GARLAND.

For fish from October 22, 1885, to October 2, 1886 . . .	$18.45	
Credit for onions . . .	3.10	
		$15.35

PETTEE & ADAMS.

Mar. 30.	For 2 casks lime, 1 cask cement,	$3.85	
April 3.	10 bags meal and cr., $10; 1,131 lbs. bran . . .	21.31	
15.	3 casks lime, 1 cask cement	7.43	
May 1.	400 lbs. middlings, $4; 15 bags meal and cr., $14.90; salt	19.65	
28.	1,000 lbs. bran, 30 bags meal, 15 bags oats . . .	54.40	
June 29.	1 bag rye meal, $1.65; plaster, $3.48; 20 bushels oats, $9.40	14.53	
Aug. 18.	3 bags corn, 10 bags meal, 5 bags oats	18.54	
26.	7 bags meal, $7.56; 1,090 lbs. bran, $9.81; 3 bags salt .	19.62	
Sept. 15.	30⅔ bushels oats, $14.61; 1,050 lbs. bran, 10 bags meal	34.35	
Oct. 6.	11 bags meal, 7 bags oats, 1,050 lbs. bran . . .	26.25	
18.	3 bags oats, 5 bags cr., 1 bag salt, 1 cask cement . .	10.44	
Nov. 22.	12 bags meal and corn . .	12.00	
1887.			
Jan. 5.	15 bags meal and corn, $15.75; 1 cask lime . .	16.85	
Feb. 28.	20 bags meal, $20.50; 5 bags oats, 600 lbs. bran . .	30.90	
Mar. 12.	1 ton bran, $20; 10 bags oats, 5 bags corn . . .	33.80	
25	cement, $1.65; 1 bag T. I. salt, 95 lbs. rye straw .	3.35	
			$327.27

BOYD BROTHERS.

1886.		
Jan. 24.	For 1 pork barrel	$2.00

KENDALL & JEWELL.

June 16.	For 2 bags salt, $1.75; 2 bbls. lime, $2.30; 1 bushel hair	$4.35

JAMES BROTHERS.

Dec. 28.	For baiting horses	$2.25

ALLEN N. CLAPP.

	For 8 bbls. kerosene from March, 1886, to March, 1887	$45.84

TOM. W. ROBINSON.

April 27.	For 260 lbs. beef	$23.40

G. W. BATCHELDER.

Sept. 15.	For 99½ lbs. butter	$17.91

ST. ALBANS FOUNDRY.

Sept. 3.	For 6 lag-irons	$2.25

J. HODGE.

Jan. 10.	For 8 w. blinds, 8 sets blind-fasteners, 98 ft. sapling	$8.13
Feb. 8.	1 door, $4.25; balusters, post, rail, newel, etc.	9.13
April 7.	10 ft. hard pine, 261 ft. sapling	8.28
12.	18 ft. Mich. sheathing, 8 ft. birch, 16 ft. ovals	.92
27.	80 ft. sapling, $2; labor	3.60
May 21.	8 ft. birch, 5¾ hours' labor	2.62
June 21.	dressing plank, 14 ft. sapling, 1 cir. top blind	2.00
Aug. 27.	7 ft. birch, 28c.; 7¼ hours' labor, $2.90	3.18
Sept. 20.	12 ft. w. wood rail, balusters	2.66
Oct. 28.	12 7-ft. w. bands Georgia pine, sash-filling	1.05

Nov. 18.	drying and putting hard-wood floor	$6.00	
Dec. 1.	12 8-ft. parting beads, 24 blind slats	.72	
1887.			
Jan. 1.	122 ft. 2 in. sapling, $3.05; 2,800 ft. maple, $61.60	64.65	
Feb. 26.	planing, drying, labor	40.00	
Mar. 19.	6 hot-bed sashes, $14.40; blind	15.15	
30.	188 ft. birch floor	10.34	
			$178.43

NEW HAMPSHIRE FIRE INSURANCE CO.

1886.		
Oct. 4.	For insurance on buildings	$97.50

N. T. SAFFORD.

Oct. 26.	For 5 bbls. apples	$5.00

AMESDEN BARNARD.

Oct. 27.	For 84 gals. cider, $6.72; 2 bbls. apples	$9.22

MRS. ROBERT AYER.

Mar. 30.	For 38 ft. chestnut lumber	$5.51

R. R. HIGGINS & CO.

Nov. 5.	For 5 gals. oysters	$5.50

CHARLES H. THAYER.

Sept. 10.	For 1 pr. bals., 3 pr. grain boots, 1 pr. shoes	$5.65	
Nov. 4.	16 prs. slippers, $4; 8 prs. brogans, $10; 8 prs. bals.	19.00	
			$24.65

HILL & COMPANY'S EXPRESS.

	For boxes, bundles, etc., from July 1 to Dec. 24, 1886	$3.35

PORTER BROTHERS & CO.

Nov. 9.	For 3 gr. gro. coat buttons, $7.25; 3 gr. gro. eyelets, $5; express	$12.40

MANCHESTER PUBLIC MARKET.

Nov.	22.	For 4 qts. oysters, 4 lbs. crackers, 89 lbs. butter, turkey .	$17.79	
	24.	150 lbs. turkey, $38.86; 71 lbs. chicken, $8.88 . . .	47.74	
				$65.63

IRAD POORE.

Nov.	23.	For 1½ cords wood	$3.75

J. M. VARNUM.

Nov.	29.	For 4,129 lbs. straw	$33.03

DR. JABEZ ALEXANDER.

Nov.	23.	For two visits to ox	$3.00

JAMES BALDWIN & CO.

Dec.	11.	For 60 bobbins	$17.00

D. A. PARKER & SON.

Oct.	21.	For 114 cords wood	$228.00

STRATTON, MERRILL & CO.

Oct.	20.	For 25 bbls. flour, $1.15; 100 bu. oats, $40	$155.00	
Feb.	4.	50 bbls. Roller Process flour .	230.00	
				$385.00

J. W. JOHNSTON.

Dec.	13.	For ½ cord manure	$2.00

S. B. JENKINS.

Dec.	16.	For tuning piano	$3.50

SIMONS, HATCH & WHITTEN.

Dec.	17.	For $4\frac{4}{12}$ doz. undershirts and drawers . .	$28.80

G. H. ELLINWOOD.

May	25.	For veterinary dentistry	$4.00

M. F. DODGE.

		For 72 loads gravel	$9.36

WILLIAM J. BLAISDELL.

Dec. 28.	For 44 gals. vinegar		$5.75

CHARLES F. SPRAGUE.

Oct. 15.	For 233⅔ yds. flannel, $26.88; 157½ yds. silesia, $12.58	$39.46	
	132¾ yds. cotton	8.63	
1887.			
Feb. 16.	256¾ yds. cotton, $18.87; 54 yds. jean, $5.40	24.27	
	42½ yds. dress goods	10.63	
			$82.99

JONES, MCDUFFEE & STRATTON.

1886.			
Nov. 22.	For 8 doz. soup-plates, $6.16; 5 doz. common plates	$9.16	
	5 doz. lamp-chimneys, $4.80; 4 lantern-globes	7.40	
	3 bbls. and carting	.93	
			$17.49

I. L. PEARL & CO.

Oct. 5.	For 456¼ yds. cassimere		$375.08

MURPHY & FARRELL.

Dec. 3.	For vent-hopper, bowl, trap, etc., and labor on water-closet		$23.70

S. HOVEY & SON.

April 3.	For castings, $2.50; 3 ladles, can, repairing tin and copper	$4.05	
May 14.	3 ladles, 1 doz. 8-quart pans, pipe, basket	3.33	
Sept. 23.	work and globe, 2 strainer-pails, 2 dippers	2.45	
25.	3 agate and 6 tin wash-bowls	1.95	
Oct. 7.	5 oven-grates, $5; express, stove-lining	6.20	
18.	2 wash-basins, brick, 2 pails, 2 hods	2.00	
Nov. 18.	1 oil-can, 2 pans	1.15	
			$21.13

J. H. LAMPREY.

Dec. 4.	For 60 lbs. honey		$6.00

PLUMER & HOLTON.

June 3.	For 3 gro. buckles, $1.25; hat, $1; 2 umbrellas	$4.75	
Dec. 6.	45 yds. canvas	6.30	
			$11.05

THORP & BARTLETT.

Dec. 29.	For 1 register, $1; stove-pipe, repairs	$2.65	
1887.			
Jan. 11.	2 pans, 2 cups, ½ doz. ladles, repairing stove-pipe	2.04	
Feb. 9.	stove cover and door, $1.25; 15 lbs. pipe, $1.50; skimmer, hoop	4.75	
Mar. 23.	2 2-quart dippers, wash-bowl, tea-pot, water-sprinkler	1.95	
			$11.39

JOHN F. GILLIS.

1886.			
April 2.	For 5 prs. shoes, $6.80; 3 prs. boots, $8.75	$15.55	
Dec. 16.	1 pair rubbers, 1 pair wool boots, 1 pair solid heel	3.40	
			$18.95

W. D. LADD & CO.

July 5.	For 29 doz. cakes		$2.32

JOHN N. FOSS.

Nov. 3.	For clipping 5 horses		$10.30

G. G. WILDER, JR.

Dec. 18.	For 24 boiler-tubes		$91.06

H. M. MOODY.

Aug. 6.	For 9 caps		$4.50

S. C. FORSAITH & CO.

Aug. 11.	For new vertical boiler with fittings and castings	$344.00	
Oct. 26.	1 Knowles steam pump	100.00	
Dec. 18.	28 tubes for old boiler	70.00	
	labor and stock setting up boiler, and repairs from May 17, 1886, to Jan. 11, 1887	123.78	
		$637.78	
	Credit old pump	40.00	
			$597.78

JOHN H. FARMER.

1887.		
Jan. 4.	For 110 lbs. butter	$23.65

JAMES CUSICK.

Jan. 7.	For 1 fur robe	$10.00

REPUBLICAN PRESS ASSOCIATION.

Jan. 1.	For "Independent Statesman" from January 1, 1887, to January 1, 1888	$1.25

CHARLES H. THAYER.

1886.		
Nov. 11.	For 6 prs. boots, $12; 1 bunch leather lacings	$13.00

LEWIS B. HOIT & CO.

1887.			
Jan. 1.	For 6 boxes soap, $19.50; 37 lbs. starch, $1.48; 5 lbs. Java coffee	$33.48	
15.	104 gals. syrup, $29.12; 62 lbs. butter, $13.04	42.16	
			$75.64

SAMPSON, MURDOCK & CO.

Jan. 25.	For Manchester Directory for 1887	$1.50

J. P. JAMESON.

1886.		
Dec. 22.	For 100 lbs. pop-corn	$3.00

GEORGE S. PERRY.

1887.				
Feb.	1.	For 5 reams note paper, $3.65; 1 doz. b. b. erasers, 1 doz. red pencils . . .	$5.15	
		½ case crayons, $4; 1 gro. penholders, slate pencils, ink	5.20	
				$10.35

A. G. WHITCOMB.

Feb.	3.	For 12 school chairs	$9.00

B. S. SNOW & CO.

Feb.	1.	For 1 bbl. extra mackerel	$16.00

W. E. MARDEN.

Jan.	25.	For extracting 2 teeth for inmate . . .	$1.00

J. W. HANSON.

Feb.	8.	For 1 pair oxen, $209; shoeing, $1.50 . .	$210.50

E. R. COBURN & CO.

Dec.	24.	For 39 books for library	$18.73

BURNS & POORE.

Jan.	1.	For 3,200 lbs. egg coal	$11.20

J. W. GOULD.

Feb.	23.	For drawing 114 cords of wood . . .	$85.50

T. S. WILSON.

Feb.	24.	For 1,575 lbs. oat straw	$11.02

MAXWELL & CAMPBELL.

Feb.	1.	For grinding corn to date . .	$13.50	
	28.	ice to fill ice-house . .	18.75	
				$32.25

L. H. JOSSELYN & CO.

1886.			
April 25.	For 12 settees, $33.60; mattress $2.75	$36.35	
28.	10 doz. chairs	78.13	
		$114.48	
	Credit making mattress ticks	36.96	$77.52

FANNIE L. BURNHAM.

1887.		
Mar. 25.	For 15½ bbls. apples	$21.02

J. T. CARTER.

Mar. 25.	For services as watchman	$14.70

GLIDDEN & CURTIS.

Feb. 1.	For 4 tons soluble guano	$123.20

F. H. LIBBY & CO.

Jan. 10.	For killing 4 hogs	$4.00

JOHN B. JONES.

Jan. 26.	For 1 yoke	$3.50

J. P. FELLOWS & CO.

1886.			
Dec. 30.	For repairing sleds and sleighs, and iron work in December	$30.05	
1887			
Jan. 31.	repairs on machines, sleds chains, etc., in January	43.55	
Feb. 28.	blacksmith repairs in February	15.20	
	horseshoeing in December, January, and February	20.80	
			$109.60

SEARS & COMPANY.

Feb. 1.	For 1 bbl. rice, $10.07; 1 hhd. molasses, $36.96	$47.03
	2 box raisins, $2.88; 1 box figs, 84c.; box dates, $3.90	7.62

Feb. 1.	For 1 keg syrup, $3.90; 44 lbs. Oolong tea, $15.40, carting, 50c.	$19.80	$74.45

DARWIN & SIMONS.

April 9.	For 30 rolls paper, 10 yds. border	$5.80	
Feb. 12.	1 doz. bowls, 4 chambers	2.40	$8.20

J. S. HOLT & CO.

	For 1,664 gals. soft and 1 box hard soap from June, 1886, to March, 1887	$108.00	
	Credit grease and bones	7.94	$100.06

E. E. COLBURN.

1885.			
June 18.	9 boxes berries, $1.85; 3 doz. lemons, 1 doz. bananas	$3.30	
Sept. 17.	fruit, honey, sweet potatoes, bag salt	8.04	
1886.			
Dec. 31.	box soap, $4.75; 1 doz. bottles bluing, $1.20	5.95	$17.29

ZENAS P. ALDEN.

Jan. 22.	For services as watchman, etc.	$30.00

WOMEN'S CHRISTIAN TEMPERANCE UNION.

Feb. 15.	For religious services for 1 year	$150.00

LIST OF INCIDENTAL EXPENSES FROM APRIL 1, 1886, TO APRIL 1, 1887.

1886.		
April 2.	Expenses to Boston	$4.00
14.	15-ft. ladder	1.65
	Expenses to Hillsborough	2.80

April 20.	2 doz. ax-handles	$4.50
22.	R. D. Gay for border	.30
23.	Paper for book covers	.25
	Apples	.75
	Dr. J. Alexander for horse medicine	.50
May 11.	Sacque for girl	3.00
13.	Expenses to Deering with cattle	5.25
	Repairs on harness	.35
22.	S. P. Pike & Co. for 10 boxes strawberries	1.25
29.	George H. Otto for painting wagon and paint	13.50
June 2.	A. B. Taylor for papering 3 rooms	5.60
	Fares of 35 boys to ball-game	5.13
5.	Expenses to Hillsborough	3.50
9.	Horseshoeing	.50
10.	Boyd Brothers for strawberries	.75
	Expenses to Concord	.30
	Carriages repaired	.75
14.	Horseshoeing	1.35
15.	Expenses after Clark	5.85
18.	Mrs. W. Scott for Seaver's soap	.25
30.	Expenses to Boston	6.80
	G. J. Raymond for 8 Panama hats	3.55
	Postage stamps during quarter	11.00
	Inmates' car-fares during quarter	16.25
	Extra work and money paid discharged inmates	24.60
July 2.	H. H. Hart for book	1.50
3.	Expenses to Penacook	1.25
5.	B. F. Philbrick for labor	1.50
	Smith & Bly for cakes	.90
	Expenses of 66 boys to ball-game	8.25
9.	Expenses to Boston, Cambridge, and Charlestown	5.10
10.	Mrs. M. A. Granger for "Child's Instructor"	3.00
12.	Recording deed	.75
17.	Expenses to Portsmouth	3.45
20.	T. R. Hoyt, for "Hoyt's Harp"	.25
21.	Expense getting oxen from Auburn	1.25
22.	Expenses to Nashua	1.40

July	23.	L. N. Barnard, for cherries . .	$1.00
		Repairing wagon	.50
	28.	Horse baiting	.50
	31.	Picnic expenses for farm boys .	3.00
		Ansel Marshall, for 1 doz. ax-handles	3.00
Aug.	2.	Walter V. Ward, rein-holder .	.35
	5.	Hulled corn	1.04
	14.	21 qts. blackberries . . .	1.32
	16.	H. A. Horton, for 800 strawberry plants	2.25
		L. N. Barnard, for 1 bushel blackberries	2.00
	25.	Horse baiting	.75
	28.	J. M. Simmons, for 2 baskets peaches	2.30
Sept.	2.	Expenses to Boston . . .	4.50
	4.	Salvation Army	1.00
	6.	Plants	.40
	11.	Publishers "Springfield Republican"	1.00
	18.	Expenses getting cattle from Hillsborough	3.50
	15.	Expenses getting cattle from Deering	3.00
	30.	Expenses to N. H. Grange Fair with cattle, etc. . . .	14.85
		Halter and surcingle . . .	.85
		Postage stamps during quarter .	11.25
		Inmates' car-fares during quarter	11.75
		Extra work and money to discharged inmates . . .	19.62
Oct.	7.	Expenses to Boston . . .	7.00
	15.	Mr. Whitefield, for fowls . .	4.00
	21.	Mileage ticket	20.00
	23.	Charles Barnard, for horse hire .	3.00
Nov.	9.	Expenses to Boston . , .	4.30
	24.	S. Woodbury, for cranberries .	.60
Dec.	4.	"Globe Store," for coal-hod, shovel, and hook . . .	.80
	11.	William Warren, for sleigh-shoes	1.75
	13.	Telegraphing	.42
	16.	J. M. Woodbridge, for hulled corn	1.05

Dec. 18.	A. L. Robinson, for filing saws	$0.75	
	Expenses to Boston	4.75	
24.	H. B. Fairbanks, for Christmas tree	.75	
Oct. 27.	For filing 2 saws	.30	
28.	J. Alexander, for medicine	.50	
30.	Horse baiting	.75	
	Postage stamps during quarter	17.00	
	Inmates' car-fares during quarter	15.25	
	Extra work and money during quarter	16.80	
1887.			
Jan. 3.	Fred H. Wines, for book	1.00	
10.	Expenses to Nashua	1.25	
	Telegraphing	.80	
21.	Expenses to Loudon with Lovering boy	3.55	
31.	Lamp-wicks	.20	
Feb. 1.	Expenses to Boston	3.85	
4.	Expenses to North Weare, for oxen	1.50	
9.	L. A. Morrison, for "Rambles in Europe"	1.75	
19.	2 doz. oranges	.50	
21.	Deerfield express	.30	
23.	C. H. Kimball, for fife	.50	
Mar. 22.	Yeast	.35	
	Postage stamps during quarter	8.00	
	Inmates' car-fares during quarter	5.50	
	Extra work and money during quarter	6.59	
			$378.02

SALARIES AND WAGES.

Paid superintendent and treasurer	$1,400.00
matron	600.00
principal teacher	333.00
assistant teachers	295.00
farmer	450.00
overseer in boys' cook-room	375.50
overseer in chair shop	286.25

Paid overseer in sewing-room	$208.00
overseer in laundry	208.00
housekeeper	208.00
watchman	282.67
assistant farmers	265.66
book-keeper	100.00
	$5,012.08

CONDENSED FINANCIAL STATEMENT OF THE TREASURER.

Cash balance in hands of treasurer April 1, 1886		$3,899.63

CASH RECEIVED.

From Merrimack River Savings Bank, part of Moody Kent fund	$1,500.00	
state treasurer	6,000.00	
For board	8,443.55	
chair work	1,902.85	
labor in hosiery	998.17	
From sale of live-stock and beef	536.29	
Manchester, for labor on highway	331.57	
Wilkins fund	365.80	
Moody Kent fund	62.50	
Louise Penhallow fund	50.00	
ex-Gov. Frederick Smyth, in memory of Mrs. Emily Smyth	28.59	
Mrs. Nathaniel White, for library books	15.00	
various sources	330.40	
		$20,564.72
		$24,464.35

CASH PAID.

Loaned Samuel Hall, part Moody Kent fund	$1,500.00
For ordinary expenses	12,794.45
machinery	1,454.33
improvements	1,925.00
salaries and wages	5,012.08

For insurance	$97.50	
ex-Gov. Frederick Smyth memorial prizes	21.00	
books from Louise Penhallow fund	50.00	
books from Mrs. Nathaniel White	15.00	
oxen	680.00	
new engine, boiler-tubes, etc.	721.00	
		$24,270.36
Cash balance April 1, 1887		$193.99

BILLS RECEIVABLE.

For board	$2,373.00	
labor and from various sources	513.00	
oxen	345.00	
		$3,231.00
		$3,424.99
Bills payable		100.00
Available balance April 1, 1887		$3,324.99

J. C. RAY, *Treasurer.*

MANCHESTER, N. H., April 1, 1887.

ANNUAL REPORT

OF THE

NEW HAMPSHIRE

STATE NORMAL SCHOOL

JUNE, 1887.

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

BOARD OF TRUSTEES.

Rev. DANIEL C. ROBERTS, President	Concord.
CHARLES A. JEWELL, Secretary	Plymouth.
His Excellency MOODY CURRIER	Manchester.
Hon. J. W. PATTERSON	Hanover.
Hon. HOSEA W. PARKER	Claremont.
WILLIAM E. BUCK	Manchester.
E. B. S. SANBORN, Esq.*	Franklin.
ALVIN BURLEIGH, Esq.†	Plymouth.
FRANK W. RUSSELL, Treasurer	Plymouth.

* Resigned 1887. † Appointed 1887.

REPORT OF THE TRUSTEES.

To the Honorable Senate and House of Representatives in General Court convened:

The seventeenth annual report of the Trustees of the State Normal School is respectfully submitted.

The work of the normal school for the year past has been quite up to the high standard of the years preceding. Considering the deficiencies in apparatus in the department of physics, and the meager proportions of the library, the results attained reflect very great credit upon the ingenuity as well as the patience of the instructors. Twenty-one pupils will have been graduated at the close of the year, and under the system developed by Dr. Rounds, the able and energetic principal, these graduates are very thoroughly prepared for the high trust which will be committed to them. It can but be true, however, that there may be lack of that completeness and finish, both in matter and method, which could be attained with even less of effort were the class-rooms equipped with all the books, instruments, and appliances of various kinds which are demanded by modern requirements and furnished by modern science and skill. The trustees feel compelled to renew the appeal, pressed heretofore upon the attention of your honorable body, for a larger generosity in dealing with the needs, convenience, and equipment of the school. The buildings are in need of changes and repairs, — the changes for convenience, comfort, and health, the repairs for the preservation and betterment of the property.

The larger number of pupils has increased the income of the boarding department, which has been conducted by Mrs. Lydia H. Weatherbee to the entire satisfaction of the committee to whose oversight the hall was consigned, and of the Board. The food has been good, wholesome, and sufficient, the service faithful and well conducted. With the kindly co-operation of all concerned there is no reason why the hall, under the present able management, should not be a comfortable and happy home for the school family. Some of the furniture and table-service has been renovated or replaced with better, and with a full school and a good number of boarders this can be continued. The hall will take care of itself if there be prosperity and harmony in the school. The porch on the front of the schoolhouse has been entirely rebuilt. Some new windows have been placed in the walls to better the light and ventilation. The chimneys are not in good condition. An order was given to the builder to repair them, but through some misunderstanding that was left undone. Before another session that will be attended to.

The new and excellent system of drainage adopted by the village makes a complete draining of the soil of the cellar possible, and this should be thoroughly done. But such a work involves an expense which should not be put upon the slender resources of the institution without re-enforcement in the shape of a special appropriation. It has been said that the reports of the trustees year after year dwell monotonously upon this subject of the need of special appropriation. The Board would be most happy to be relieved of the monotonous duty of constantly renewing this application for that which is not granted. And the Board would most respectfully represent to your honorable body the wisdom of placing the normal school upon a strong and substantial footing of completeness in accommodations and equipment if its useful existence is to be continued.

The reports of the treasurer and principal are herewith submitted.

Very respectfully,

THE TRUSTEES.

REPORT OF THE PRINCIPAL.

To the Trustees of the State Normal School:

I respectfully submit my fourth annual report. With the hearty seconding of an able and earnest faculty, whose names will be found in the accompanying school circular, the work of the school year has steadily advanced towards a successful close. Lengthening experience emphasizes my conviction of the surpassing value of the peculiar feature of this school, — its complete system of training schools. The organizers of the New Hampshire State Normal School "builded better than they knew" in securing to the school the entire control of a complete system. This is an advantage possessed by no other normal school in the United States. Experience has shown that divided control of a training school is very sure to result in local prejudices and jealousies, which hinder its working or completely destroy it, and to this fundamental defect is largely due the fact that so many of the normal schools of the United States are entirely without this essential element in a complete school for the training of teachers, lacking which the normal school is shorn of its chief power. The patrons of the school have become accustomed to the system ; their satisfaction with results is shown by generous yearly appropriations, far in excess of what is demanded by their contract with the State. It would require years of trial in a new field to secure such cheerful acquiescence in the plans of the normal school, and there would be danger of failure in the attempt. I would refer to the sections of the accompanying circular on "Training," and on "Schools of Application," for fuller details.

During the sixteen years of the existence of the school the total number of different pupils has been 1,462, and 322 have graduated from its courses of study. The number of different pupils in attendance the past year has been 63, the largest number for several years, and the graduates of this year number 22. It would be to the benefit of the State were these numbers greatly increased, but it should be borne in mind that many of these pupils are teachers when they enter the school, that all are practically teachers when they graduate, that of those who do not complete the course most are teachers for a longer or shorter time, and many remain teachers for life. The advance in the professional character of the school is shown in the increasing ratio of graduates from the full course to the total membership in later as compared with earlier years, and when we compare our school with some of the largest normal schools in the country we have no cause for shame. Thus in the catalogue of one of these I find a total membership of 483 and a graduating class of 25; in another a membership of 789, and a graduating class of 28.

The attendance in the various departments of the school is as follows:

NORMAL DEPARTMENT.

Graduates	22
Number of different pupils	63

TRAINING DEPARTMENT.

Number of different pupils:		
High school	44	
Grammar school	41	
Intermediate school	58	
Primary school	50	
		193

NORMAL DEPARTMENT BY TERMS.

Fall term	37	
Winter term	53	
Spring term	48	
		138

TRAINING DEPARTMENT BY TERMS.

Fall term	177	
Winter term	178	
Spring term	175	
		530

A question is often raised as to the cause for the comparatively small numbers in attendance in the normal school. The history of the school as traced in legislation and the reports of its officers gives a sufficient explanation. Thirty-two years after the first state normal school of Massachusetts had been established as a free school with two years in its course of study, and years after Maine, Connecticut, and Rhode Island had established normal schools on the same basis, the State Normal School of New Hampshire was established with the legal provision that "said normal school shall be established and maintained without expense to the State, except the necessary expenses of the trustees, which shall not exceed the sum of three hundred dollars," that the school should be in session at least twenty weeks each year, and that pupils could graduate from one of the courses at the close of one school year. Large numbers actually went out from the school with diplomas at the end of a course of only twenty weeks. Yet the school, sustained by tuitions and voluntary contributions, opened with a good faculty and seventy students, and in its second year enrolled one hundred and eighty-four different pupils. To an urgent request of the trustees for $12,000 for building and $3,000 for a library, the State responded with an appropriation of $5,000. In the first four years of the school the State gave nothing for current expenses. For the lack of funds the faculty had to be cut down, and at the close of the third year the school suffered the loss of its first principal by death from overwork. During a part of the fourth year the faculty consisted of only two teachers, each teaching seven to eight hours a day, and one of these broke down before the close of the year. In 1875 the State made its first appropriation for current expenses, and the school was declared a free school, but tuitions were still exacted from those who did not complete the course of the first or the second year, until 1886. For four years, without endowment, the school had been sustained by tuitions and contributions. It is safe to say that a state normal school established under such auspices and sustained on such a basis was never before known.

The report of 1876 speaks of constant improvement in the school, of jealousies which had sprung up against the school as an intruder into the educational field, and of the great harm which had been done to the cause by the graduation of large numbers from the short course of twenty weeks, a course of study only one quarter the length of the shortest course of other New England normal schools. Of the one hundred and seventy-five graduating up to this time, one hundred and fifty-eight had graduated from the twenty weeks' course. In 1878 the jealousies and opposition referred to in earlier reports resulted in reducing the appropriation for the school to $3,000. The numbers in the school had been greatly reduced, the outlook was to most eyes discouraging. Yet instead of trying to increase the numbers by merely popularizing the school, it was made more severely professional than ever before. As might have been expected, numbers did not rapidly increase, but the character of the school as a school for professional training was established beyond all possibility of cavil. The policy continued of cutting down even the modest appropriations asked, or of refusing them altogether, and the complaint continues from year to year of insufficient accommodations and means of instruction. Coming to the school in the fall of 1883, I found my hands tied in the first year of my service by a debt upon the school of about $1,000, largely due to the cutting down, several years before, of an appropriation of $5,000 to $3,500, without corresponding amendments to the clauses specifying work to be done. This debt was paid by reducing the number of teachers in the normal school for a year and a half to two, and this at a time when a full faculty was needed to give confidence in the work of the school. A fuller course of study, essentially the same as that in the normal schools of Massachusetts, was organized, and has been carried out under great difficulties. No other school in New England is carrying such a course of study without at least twice our teaching force, and with the present faculty it will be impossible to continue it with a large number of pupils.

Excellent furniture has been this year purchased for one of our schoolrooms. There have been some additions to the apparatus, and to the library. For further information as to the apparatus and library I refer to the accompanying circular. There are urgent needs, some of which have been repeatedly mentioned. Provision should be made for an additional room and teacher for the training schools. The large hall in the third story should be fitted up for recitation-rooms and assembly-room for the normal school. The room in the second story, built several years since for a laboratory, should be completed according to its original purpose. It would cost about $1,000 to make of this such a laboratory as Manchester has recently given to its high school. Additions are needed to the library and apparatus. The steam-heating apparatus should be thoroughly inspected by a competent person, and needed changes should be made. It is now wasteful of coal, and unsatisfactory in results. As there is a flue in each room, ventilation could be efficiently provided for in connection with the necessary improvements in heating. The basement should be improved in drainage and cemented. The blackboards need a coat of slating. There are general repairs needed which I will not specify.

The growth of the normal school system of the United States is shown in the following comparative statement for 1875 to 1885, inclusive:

	1875.	1885.
Number of schools	137	263
Number of teachers	1,031	2,076
Number of pupils	29,105	55,135

New Hampshire has not duly shared in this advance. In a comparative statement of appropriations the State also stands at a disadvantage. Massachusetts appropriates for her five normal schools some $70,000 annually, New Hampshire for her one, $5,000.

It has often been said that many go from New Hampshire to Massachusetts normal schools. The record shows that there are but few New Hampshire pupils in normal schools beyond her borders. These few, however, seldom come home to teach. The State must train her own teachers, and she gets the full benefit of the labor of nearly all she does train.

For the personal character of its students and the excellence of their work as students and as teachers, this normal school may safely challenge comparison with the best. It has advantages over any other in New England in its means for training. With a fit equipment for its work, with a faculty in number fairly equal to the work demanded, its future would be assured. The support for its one normal school should be such as to place it beyond all question among normal schools where its Phillips Academy and its Dartmouth College stand among institutions for higher education.

Respectfully submitted.

C. C. ROUNDS.

TREASURER'S REPORT.

PLYMOUTH, N. H., May 1, 1887.

To the Trustees of the State Normal School:

GENTLEMEN,—I have the honor to report that since relieving the Hon. Charles A. Jewell as treasurer of the State Normal School Oct. 16, 1886, I have received and paid out money as shown in the following statement:

RECEIPTS.

Charles A. Jewell, treasurer	$295.35
State of New Hampshire	4,000.00
Town of Plymouth	1,800.00
	$6,095.35

EXPENDITURES.

Prof. C. C. Rounds, principal, Aug. 1, 1886, to May 1, 1887, $\frac{3}{4}$ year, @ $2,000	$1,500.00
Miss Anna McLaury, teacher, Sept. 4, 1886, to May 1, 1887, $\frac{8}{10}$ school year, @ $800	640.00
Miss Mary A. Emerson, teacher, Sept. 4, 1886, to May 1, 1887, $\frac{8}{10}$ school year, @ $500	400.00
Miss Fredrietta T. Hill, teacher, Sept. 4, 1886, to May 1, 1887, $\frac{8}{10}$ school year, @ $400	320.00
Miss Mary L. Stewart, teacher, Sept. 4,	

1886, to May 1, 1887, $\frac{8}{10}$ school year, @ $400	$320.00	
Miss Eusebia A. Minard, teacher, Sept. 4, 1886, to May 1, 1887, $\frac{8}{10}$ school year, @ $400	320.00	
Miss Kate G. Eastman, teacher, Sept. 4, 1886, to May 1, 1887, $\frac{8}{10}$ school year, @ $350	280.00	
George H. Robinson, janitor, Aug. 23, 1886, to May 1, 1887	213.34	
		$3,993.34
Repairs on boarding-house	$56.01	
Repairs on school building	227.50	
		$283.51
Fuel		24.50
Water, July 1, 1886, to Jan. 1, 1887		12.50
Insurance		127.75
Advertising, etc.		21.67
		$4,463.27
Balance in hands of treasurer		1,632.08
		$6,095.35

Estimated Expense of School for Remainder of School Year.

Salaries	$1,300.00
Bills presented, not yet approved	275.00
	$1,575.00
Making probable balance in hands of treasurer at close of school year	$57.08

BOARDING-HOUSE RECEIPTS.

Charles A. Jewell, treasurer	$25.00
Boarders	2,426.65
	$2,451.65

BOARDING-HOUSE EXPENDITURES.

Services	$692.72
Supplies	1,132.37
Fuel	190.48
Water	40.00
Repairs	10.79
Miscellaneous	88.17
Balance on hand	297.12
	$2,451.65

Estimated Expense of Boarding-house for Remainder of School Year.

Services (accrued and prospective)	$175.00
Supplies	115.00
Rent of piano	10.00
Miscellaneous	25.00
	$325.00

Receipts for board during remainder of school year will be about	$100.00
This would leave balance of boarding-house fund on hand at close of school year	$72.12

Respectfully submitted.

FRANK W. RUSSELL,
Treasurer.

SEVENTEENTH ANNUAL

CATALOGUE AND CIRCULAR

OF THE

NEW HAMPSHIRE

STATE NORMAL SCHOOL,

1886-87.

TEACHERS

OF THE

NORMAL AND TRAINING SCHOOLS.

CHARLES C. ROUNDS, PH. D., PRINCIPAL.

ANNA McLAURY.

MARY A. EMERSON.

FREDRIETTA T. HILL.

KATE G. EASTMAN.

MARY L. STEWART.

EUSEBIA A. MINARD.

JOHN KENISTON, *Teacher of Vocal Music.*

FRED'K NEWTON WILLIAMS, *Teacher of Drawing.*

GRADUATES—1887.

Name.	Residence.
COFFEY, MARY E.	Plymouth.
DRAKE, CARRIE E.	Plymouth.
DUNSMOOR, LOUISE E.	Bradford, Mass.
EASTMAN, C. EVA	Henniker.
FOSTER, C. IMOGENE	Claremont.
FRENCH, MARY L.	Franklin.
GOODRICH, ADELLA R.	Nashua.
HIBBARD, LUCY E.	West Stewartstown.
JENNISON, FANNY E.	Walpole.
KEMPTON, FLORENCE L.	Claremont.
LANE, ANNIE F.	Tilton.
LANGDON, FANNY E.	Plymouth.
LITTLEFIELD, MARY A.	Lancaster.
McDANIEL, CORA	West Springfield.
McQUESTEN, NETTIE M.	Plymouth.
MERRILL, ANNA M.	Plymouth.
ROUNDS, KATHARINE E.	Plymouth.
SARGENT, CORA I.	Danbury.
SARGENT, I. BELLE	Danbury.
SARGENT, HERBERT E.	Plymouth.
WATSON, MABEL I.	Plymouth.
WOODMAN, HELEN E.	Franklin Falls.

GRADUATES—1871-1887.*

Name.	Residence.
Abbott, Lulu L.	South Andover, Me.
Adams, Flora M.	Plymouth.
Adams, Frank B.	New London.
Adams, Oriana	Northfield.
Allison, Flora G.	Dublin.
Ambrose, Warren B.	North Sandwich.
Archibald, Jennie C.	Hinsdale.
Armstrong, Nettie M.	Plymouth.
Austin, Arzella E.	Landaff.
Avery, Mary E.	Alton.
Bailey, Cleora E.	Manchester.
Baker, Carrie E.	Rumney.
Baker, William D.	Plymouth.
Beckley, Emilie E.	Keene.
Beede, Hannah R.	Center Sandwich.
Bickford, Lizzie E.	Piermont.
Bickford, Lucinda M.	Orford.
Bill, Mahala L.	Gilsum.
Blaisdell, Alice L.	Campton.
Blanchard, Adelle	Concord.
Blodgett, Fred C.	Plymouth.
Bolles, Maria P.	Winchester.
Brewster, Belle	Wolfeborough.
Brewster, Sarah	Wolfeborough.
Briant, Mary S.	West Newbury, Vt.
Brock, Hattie E.	Plymouth.

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* It is requested that information in regard to errors, omissions, changes of name or of address, be sent to the principal, that correct registration may be made.

Name.	Residence.
Brown, Abbie M.	Hanover Center.
Buckminster, Lucy M.	Keene.
Bunten, Lizzie J.	Dunbarton.
Calley, Emma W.	Plymouth.
Camp, Lucia E.	Stowe, Vt.
Cartland, Jane S.	Lee.
Carbee, Emma	Woodsville.
Caswell, Mary C.	Concord.
Cate, Emma G.	Wolfeborough.
Cate, Lizzie B.	Brookfield.
Chase, William A.	Auburn.
Chase, Lillian H.	Windsor, Vt.
Chase, Nettie M.	Deerfield.
Chase, Charles A.	Rumney.
Cheney, Lennie E. A.	Plaistow.
Cheney, Nettie B.	Plaistow.
Child, William C.	Bath.
Cilley, Flora F.	Hill.
Clark, Sarah E.	Pittsfield.
Clark, Fannie B.	Plymouth.
Clark, Charles E.	West Plymouth.
Clark, Jennie G.	Auburn.
Clark, Cora M.	Plymouth.
Clark, Irene S.	Plymouth.
Clark, Clara T.	Plymouth.
Clark, Ella A.	Plymouth.
Clark, Myron J.	West Plymouth.
Clarke, Ida B.	South Newmarket.
Clay, Arzelia C.	Piermont.
Clement, Hetta L.	Plaistow.
Clement, Mary A.	Plaistow.
Clement, Anna G.	Laconia.
Cobb, Estelle M.	Quincy, Mass.
Cobleigh, N. Florence	Groveton.
Coffey, Mary E.	Plymouth.
Coffin, Charles L.	Campton.
Connell, Mary E.	Westfield, Vt.

Name.	Residence.
Connell, Lilla M.	Plymouth.
Cox, Mira C.	Plymouth.
Cox, Emma W.	Meredith.
Cummings, Carrie	Plymouth.
Cutter, Sarah L.	Keene.
Davis, Mary P.	Bath.
Day, Fred N.	Stratford.
Dodge, Lizzie E.	Plymouth.
Dolloff, Marie A.	Dorchester.
Donovan, John J.	Plymouth.
Dorr, Ella M.	Wolfeborough.
Dow, Annie H.	Newmarket.
Dow, Isophene A.	South Newmarket.
Drake, Carrie	Plymouth.
Drake, Charles E.	West Plymouth.
Drake, Clara G.	West Plymouth.
Dudley, Ariana S.	South Brentwood.
Dunsmoor, L. E.	Charlestown.
Durgin, Mary E.	Haverhill.
Eastman, Angie L.	Orfordville.
Eastman, C. Eva	Henniker.
Eastman, Kate G.	Plymouth.
Eastman, Jeanette O.	North Conway.
Eaton, S. Florence	Auburn.
Ewer, Jennie H.	Corinth, Vt.
Ewer, Nat. B.	Lee.
Farwell, Ella M.	Harrisville.
Fellows, Emma J.	Center Harbor.
Fellows, Jennie M.	Suncook.
Ferrin, Mrs. Isabella	Bridgewater.
Ford, Mary A.	Lisbon.
Forsaith, Frances S.	Antrim.
Foster, C. Imogene	Claremont.
Fowle, Sarah J.	Pembroke.
Fowler, Sarah M.	Concord.
Foye, Josie E.	Rye.
French, Eva Q.	Pembroke.

Name.	Residence.
French, John M.	Jeffersonville, Vt.
French, Mary L.	Franklin.
Fullsome, Helen A.	South Tamworth.
Gault, Metta G.	Suncook.
George, Cora	Stowe, Vt.
Gilbert, Ella J.	Keene.
Glidden, Nettie L.	Claremont.
Goodrich, Adella R.	Nashua.
Goodwin, Ellen F.	Franklin.
Gordon, Mary A.	Thornton.
Gore, Elnora F.	Wentworth.
Gould, Addie E.	Antrim.
Gould, Alice	Pelham.
Greely, Hattie F.	Franklin Falls.
Haley, Seddie E.	Wolfeborough.
Hall, Carrie E.	Plymouth.
Handy, Amelia P.	Hinsdale.
Hardy, Ida J.	Hopkinton.
Hardy, Lucius M.	Plymouth.
Harmon, Rosebrook E.	Madison.
Harvey, Clara A.	Nottingham.
Harvey, Kate E.	Nottingham.
Hatch, Letta A.	Tamworth.
Hayes, Etta	Dover.
Hayes, Henry G.	Madbury.
Hazeltine, Arthur S.	Plymouth.
Hazeltine, Jennie E.	Suncook.
Hazeltine, Martha F.	Plymouth.
Heath, Cora L.	West Plymouth.
Hersey, Mary A.	Franklin.
Hersey, Ella	Franklin.
Hibbard, Lucy E.	West Stewartstown.
Hill, Fredrietta T.	Goodwin's Mills, Me.
Hilliard, Ladore J.	Acworth.
Hinkley, Alice F.	Langdon.
Hobson, Nellie M.	East Brighton, Vt.
Hodgdon, Lillie K.	Rochester.

Name.	Residence.
Holmes, Belle M.	Hopkinton.
Holt, Evelyn E.	Pembroke.
Horn, Mattie A.	Rochester.
Hough, Helen M.	Lebanon.
Howard, Katie	Orford.
Howe, Ada E.	Plymouth.
Hoyt, Hattie J.	Meredith.
Hoyt, Herbert F.	Lake Village.
Huckins, Addie E.	Holderness.
Hull, Theresa A.	Plymouth.
Hunt, Agnes C.	Sandown.
Jennison, Fanny	Walpole.
Kelley, C. Belle	Rumney.
Kelley, Sarah J.	Claremont.
Kelley, Nellie B.	Franklin.
Kempton, Florence L.	Claremont.
Kenniston, Charles M.	Manchester.
Keyes, Fannie M.	Ashland.
Keyes, Maggie H.	Hinsdale.
Kinsman, Jane M.	Plymouth.
Knowles, Ella E.	Northwood Bridge.
Ladd, Rose M.	Portland, Me.
Lane, Annie F.	Tilton.
Lane, Clara A.	Epping.
Lang, Elizabeth W.	Meredith.
Langdon, Fanny E.	Plymouth.
Learned, Clara M.	Chester.
Leverett, Caroline R.	Plymouth.
Littlefield, Mary A.	Lancaster.
Littlefield, Willis I.	Campton.
Locke, Belle F.	Great Falls.
Lord, Emma L.	South Tamworth.
Lyman, Annie L.	Exeter.
Mack, Vienna D.	Gilsum.
Mann, Susan M.	Benton.
Marshall, Flora S.	Columbia.
Martin, Emma J.	Bridgewater.

Name.	Residence.
Martin, Nettie A.	Andover.
Mason, Mary E.	South Tamworth.
Mason, Harriet L.	Keene.
Mason, George L.	Moultonborough.
McAlvin, Annie J.	Amherst.
McClure, Viola E.	Plymouth.
McDaniel, Cora	West Springfield.
McDaniel, Ella	West Springfield.
McMurphy, Daniel	Plymouth.
McQuestion, Gertrude I.	Plymouth.
McQuesten, Nettie M.	Plymouth.
Meade, Helen M.	Northwood Center.
Melendy, Minnie S.	South Fairlee, Vt.
Merrill, Anna M.	Plymouth.
Merrill, M. Emma	Plymouth.
Merrill, Rena E.	Plymouth.
Merrian, Jennie M.	Walpole.
Milton, Belle A.	East Canaan.
Mintzer, Ida M.	Philadelphia, Penn.
Mitchell, Ellen S.	Yarmouthville, Me.
Mitchell, Nettie F.	Campton.
Mitchell, Frederica S.	Manchester.
Morrison, Minnie J.	Franklin.
Mosely, Lillian E.	Canaan.
Moulton, Clara A.	Thornton.
Moulton, Else A.	Nashua.
Mussey, Ellen M.	Dannemora, N. Y.
Nims, Elizabeth	Keene.
Nichols, Clara I.	Haverhill.
Noyes, Laura E.	East Haverhill.
Nutter, Mantie A.	Effingham Center.
Nutting, Mary E.	Plymouth.
Nutting, Florence B.	Plymouth.
Ockington, Ada M.	Lancaster.
O'Neil, Elizabeth J.	Exeter.
Page, Cora L.	Campton.
Page, Emma V.	Plymouth.

Name.	Residence.
Palmer, Sarah R.	Lisbon.
Parke, Cora L.	Plymouth.
Pease, Abbie A.	South Newmarket.
Peck, Ida M.	Lancaster.
Perham, Orrie A.	South Acworth.
Perley, Minnie M.	Laconia.
Philbrick, Mary L.	South Deerfield.
Pickering, Alma A.	Newington.
Pierce, Addie F.	Hollis.
Piper, Esther A.	Colebrook.
Platt, Charles D.	Stratford.
Pollard, Louise M.	Brentwood.
Poor, Helen W.	Derry.
Porter, Lucia A.	Lancaster.
Prescott, Mary L.	Concord.
Preston, Grace E.	Natick, Mass.
Purmont, Ida M.	Enfield Center.
Purmont, Clara A.	Enfield Center.
Quimby, Ida M.	North Sandwich.
Quimby, J. Langdon	North Sandwich.
Remick, Etta T.	Rye.
Richardson, Ella	Lyndeborough.
Richardson, Ada M.	Keene.
Richardson, Mary E.	Pelham.
Robinson, Annie J.	Meredith.
Robinson, Grace G.	Plymouth.
Robinson, John E.	Plymouth.
Robinson, Mary H.	Brunswick, Me.
Robins, Ida M.	Plymouth.
Rogers, Mattie M.	Campton.
Rogers, Alice	Orford.
Rollins, Frank H.	Plymouth.
Ross, Mary E.	Bath.
Rounds, Katharine E.	Plymouth.
Russell, Frank P.	Plymouth.
Russell, Florence M.	Plymouth.
Sanborn, Alice E.	Worcester, Mass.

Name.	Residence.
Sargent, Augusta C.	Plymouth.
Sargent, Cora I.	Danbury.
Sargent, Herbert E.	Plymouth.
Sargent, Ida Belle	Danbury.
Sargent, Elisa	Franklin.
Sargent, Mary A.	Plymouth.
Sargent, Sarah M.	Plymouth.
Sargent, Stella B.	Wilton.
Sawyer, Amanda L.	Bath.
Sawyer, Sarah E.	Webster.
Scott, Lucius M.	Elmore, Vt.
Sevie, Annie M.	Dorchester.
Shea, Vincent E.	Greenland.
Small, Belle F.	Amherst.
Smith, Mary L.	Plymouth.
Spalding, Harriet R.	Wilton.
Spaulding, Effie M.	Rumney.
Spaulding, Ella M.	Rumney.
St. Clair, Benjamin F.	Meredith.
Stevens, Anna M.	Newmarket.
Stevens, Amelia A.	Salisbury.
Stevens, Emma F.	Rumney.
Stevens, Mabel	Center Harbor.
Stevens, Georgie	Deerfield Center.
Stevens, Mary E.	Rumney.
Stevens, Sarah A.	Great Falls.
Stevens, Sarah K.	Brentwood.
Stoddard, Jennie M.	Johnson, Vt.
Straw, Ella E.	Claremont.
Strong, Emily	Orford.
Strong, Mary	Orford.
Stewart, Isabella	Dover.
Swett, Etta M.	Wolfeborough.
Taylor, Mary F.	Nelson.
Teague, Gertrude J.	Norway, Me.
Thompson, Emma J.	Keene.
Thompson, Nellie M.	Hudson.

Name.	Residence.
Thompson, Belle J.	Hudson.
Tilden, Laura B.	Keene.
Titus, Mattie J.	North Haverhill.
Townsend, Jennie D.	Dover.
Tricky, Charles H.	Dover.
Tucker, Annie E.	Plaistow.
Tucker, Emma L.	Deerfield Center.
Tuttle, Sadie J.	South Durham, Me.
Vittum, Charles W.	Sandwich.
Walker, William E.	Webster.
Warden, Charles A.	Hanover.
Warden, Christie C.	Hanover.
Warden, Mira A.	Hanover.
Washburne, Laura H.	Orfordville.
Watson, Elizabeth I.	Moultonborough.
Watson, Mabel I.	Plymouth.
Webb, Nellie F.	Lancaster.
Weeks, Cora E.	West Rumney.
Wells, Fred A.	Plymouth.
Whidden, Clara E.	Stratham.
White, Edwin H.	Auburn.
Whitmore, Laura M.	Wentworth.
Wiggin, Capitola L.	Tuftonborough.
Wight, Ida E.	Newport.
Wilder, Mary E.	Keene.
Wilkinson, Annie H.	South Newmarket.
Woodman, Helen E.	Franklin Falls.
Wyatt, Eva S.	Rumney.
Young, Augusta S.	Hill.
Young, Ellen	Colebrook.
Young, Lillie L.	Madbury.

CALENDAR.

1887.

Spring term closes June 9.
Alumni reunion, June 10.

SUMMER VACATION.

Fall term begins August 30.
Fall term closes November 17.
Winter term begins November 29.

1888.

Winter term closes February 23.
Spring term begins March 14.
Spring term closes June 8.

SUMMER VACATION.

Fall term begins August 29.

CIRCULAR

OF THE

New Hampshire State Normal School.

LOCATION.

Plymouth, the location of the Normal School, is near the center of New Hampshire, in the beautiful valley of the Pemigewasset, in the heart of the lake region of the State, and in the "gateway of the mountains," twenty miles south of the Flume and twenty-five miles south of the Profile and Franconia Notch. It is on the Boston, Concord & Montreal Railroad, fifty-one miles north of Concord and one hundred and twenty-four miles from Boston. The railroad makes well-nigh perfect connections with all parts of the State, bringing the school within two hours of Concord, five hours of Dover by way of Newmarket Junction and Concord, four hours of Wolfeborough by way of the Weirs, three hours of Nashua, four hours of Lancaster, four hours of Claremont, four and a half hours of Lebanon, and five hours of Keene. There are two mails from the north and three from the south daily.

The beauty of the village and its immediate surroundings, and its grand mountain views, have often attracted the attention of tourists and artists.

"In scenery, Plymouth is remarkable for the beauty of its meadows, through which the Pemigewasset winds, and for the grace of its elm trees. Even the hurrying and careless visitor will have his attention arrested here and there by a faultless one, standing out alone over its private area of shadow, seemingly an ever-gushing fountain of graceful verdure." — *Starr King.*

The natural beauty of the region, and the remarkable healthfulness of the climate, furnish ideal conditions for the location of such a school.

PURPOSE.

The purpose of the normal school is thoroughly to train teachers for their professional labors: 1. By assuring adequate scholarship; 2. By a course of professional study; 3. By training in the art of teaching, under the direction and criticism of the principal and other teachers of the school. The training school comprises primary, grammar, and high school grades, extending through a course of study of eleven years.

The following is the prescribed

COURSE OF STUDY

to be completed in two years, arranged according to relation of subjects, and not to order of study:

Professional Study. School Organization and Management; Mental and Moral Philosophy; History and Science of Education; Art of Teaching.

Language. Reading; Grammar; Composition; English Language and Literature.

Mathematics. Arithmetic; Book-keeping; Algebra; Geometry.

Natural Science. Physics; Chemistry; Physiology and Hygiene; Botany; Geography, mathematical, political, and physical.

Miscellaneous. History; Civil Government and School Law; Writing; Drawing; Singing.

Common-school studies are taken up mainly as thorough reviews of the pupil's previous attainments.

Training in teaching, beginning the first year, increases in amount with successive terms, according to the pupil's preparation for it by study of principles and methods.

COURSE OF INSTRUCTION.

	FIRST YEAR.			SECOND YEAR.		
	FIRST TERM.	SECOND TERM.	THIRD TERM.	FIRST TERM.	SECOND TERM.	THIRD TERM.
LANGUAGE.	Reading.	Grammar.	Composition.	Composition and Rhetoric.	English Literature.	English Language.
MATHEMATICS.	Arithmetic.	Arithmetic. Elementary Algebra.	Elementary Algebra.	Geometry.	Book-keeping.	Advanced Algebra.
NATURAL SCIENCE.	Geography.	Physics.	Botany.	Chemistry.	Physiology.	Physical Geography.
MISCELLANEOUS.	History.	History.	General Review of Elementary Studies.	Civil Government and School Law.		
PROFESSIONAL.	School Management.	Psychology.	Psychology and Ethics. Didactics—Methods.	Pedagogy. Methods and Training.	Pedagogy. Methods and Training.	Pedagogy. Methods and Training.

Reading may be taken as a special exercise. Arithmetic and algebra may occupy three terms or two, and be distributed as convenient. Geometry may begin in third term, in case algebra has been completed. History of education is taken mainly as a course of reading. Drawing and vocal music are taken as special exercises, two lessons a week. In third term, didactics is taken with study of methods; in second year, study of methods accompanies practice in training schools.

ANALYSIS OF THE COURSE OF STUDY.

PROFESSIONAL STUDY.

1. Study of best methods of construction and furnishing of schoolhouses, and of modes of organization, gradation, and management of schools.

2. General study of facts and laws of mental growth and action, and detailed consideration of modes of intellectual action, with special reference to correct methods of culture.

3. Principles of the science of education, and comparative and critical study of methods of teaching the various branches, with constant reference to the principles of education.

4. History of education in general outlines, in the most interesting and fruitful reforms accomplished, and in the lives of educational reformers, as Comenius, Rousseau, Pestalozzi.

TRAINING.

1. Class recitations before the school, criticised as recitations by students and teachers.

2. Preparation of written analyses and plans of lessons, according to schemes and models previously explained and discussed, and criticism of these by teachers and pupils.

3. (*a*) Teaching exercises before a class or before the school. (*b*) Critical discussions of the exercises by students and by teachers. (*c*) Written statements of the results of the discussions, made by students in turn. These exercises are given to normal classes, or to classes from the model schools, and are frequently assigned to a class or to a section of a class to prepare, one of the number being designated, after the preparation, to give the exercise.

4. Observation in the model schools, for the purpose of gaining a knowledge of their organization and management.

5. Teaching classes in the model schools, under the instruction and direction of teachers, and criticism of teachers and classmates, commencing with the lowest classes in each subject, and passing successively through the various grades.

6. Teaching certain selected subjects for a longer time, so as to obtain a better command of class-work.

7. Taking charge of the instruction and management of several classes, or of a school, for several weeks at a time, so as to obtain a better command of the working of a school.

In all practice the pupil teacher is held responsible for discipline as well as instruction. Character and direction are given to the work of the model schools by the instruction of the regular teachers, who are responsible for keeping them up to the highest standard. In assignments for practice-teaching, care is taken that the regular order be not interrupted, and that the schools be at all times maintained on the footing of veritable model schools.

LANGUAGE.

Reading and Spelling, and comparative study of the methods of teaching in the successive grades of school.

Language and Literature. Study of the history and development of the English language, and of selections from representative English and American authors.

Grammar. Review of elementary grammar; critical study of definitions and principles, rules and constructions, clausal and verbal analysis; methods of teaching.

Composition. Structure of sentences, simple, complex, and compound; punctuation; use of capitals; rules for paragraphing and exercises in writing paragraphs; forms of examination papers; exercises in writing letters, cards, notes, etc.; preparation of topical analyses of selections from literature and from text-books; preparation of analyses, and exercises in narrative, descriptive, and expository composition; preparation of original essays from analyses previously prepared and criticised; methods of teaching.

MATHEMATICS.

Arithmetic. Review of elementary arithmetic, with special reference to methods of teaching and practice in teaching; ratio and proportion, insurance, interest, taxes and duties, exchange, accounts, stocks and bonds, partnership, banking, square and cube roots, and practice for repetition and review of the whole course, with methods of teaching and drill in teaching.

Book-keeping. Single and double entry; methods of teaching.

Algebra. Algebra, through quadratics and roots; methods of teaching.

Geometry. Lessons in form, and in geometry and its applications, with the use of drafting instruments; methods of teaching.

NATURAL SCIENCE.

Physics. Mechanics, sound, light, heat, magnetism, and electricity, illustrated by problems, and by many experiments performed by the class; methods of teaching.

Chemistry. Most important principles of inorganic chemistry, with a few lessons in organic chemistry, illustrated by many experiments performed by the class; methods of teaching.

Physiology. From specimens, skeleton, and comparative anatomy; hygiene, with special reference to the effects of alcohol and narcotics; methods of teaching.

Botany. Structural botany; flora of the locality, with preparation of herbarium, and at least twenty-five written analyses.

GEOGRAPHY.

General. Form, size, motions of earth; circles, zones, latitude, longitude; forms of land and water; winds, ocean currents; climate; plants, animals; races of man; states of society; religions, governments, industrial pursuits.

Special. The continents; position, size, shape, surface, drainage, climate; productions, vegetable, animal, and mineral; political divisions; inhabitants, manners and customs, industries, commerce, and chief ways of intercommunication; principal cities, their relation to art and science, and to commercial and industrial life.

Map-molding and map-drawing on various scales.

Special study of United States, New England, and New Hampshire, of Palestine, and of several countries most important from their relation to history and to the United States.

It is made the essential aim in the teaching of science to show how it may be given an educative value in the common school; consequently this instruction is based upon intuition. The instruction in physics and chemistry is always accompanied by experiments; that in geography is made intuitive and interesting by use of means of illustration, by narratives and descriptions, and by establishing connections between geography and history. Especial care is taken to show the limits and methods of geographical instruction in the various grades of school.

HISTORY AND GOVERNMENT.

History. Migration of nations; the story of the life of the leading peoples of antiquity, especially the history of the Greeks (*a*, the heroic age; *b*, the age of the legislators; *c*, the Persian wars, to Alexander the Great, inclusive); the history of the Romans (*a*, the legends of the epoch of the kings; *b*, history of the republic, under the form of biographies; *c*, end of the republic, and emperors of the first and second centuries); downfall of heathenism and progress of Christianity; rise of Mohammedanism; growth of the papacy; feudal system; inventions and discoveries of the fourteenth and fifteenth centuries; the renaissance; the reformation.

History of the United States in its successive periods and phases, with the related European history.

Civil Government and School Law. Brief study of organization of towns, counties, the State, and the United States; with detailed study of constitution of United States, and of school law.

DRAWING.

First Year.

First Term. Free-hand drawing from objects. Study of the *appearance* of models in different positions, with particular attention to figures bounded by straight lines.

Second Term. Free-hand drawing from objects, introducing the simple and compound curves and light and shade.

Third Term. Free-hand drawing, light and shade, and the study of the scroll.

Second Year.

First Term. Principles of perspective; elements of design.

Second Term. Working drawings; methods of teaching.

Third Term. Practice in teaching; historic ornament.

MUSIC.

First Term. Treble staff, notation, scale and pitch names, French time names, and use of modulator.

Second Term. French time names, singing in two or three parts, study in more remote major and minor keys.

Third Term. Construction, expression, teaching exercises.

A chorus for study of more difficult music is maintained throughout the course.

The course of study extends through two years, and each year is divided into three terms of the length, respectively, of twelve, thirteen, and thirteen weeks.

Those who cannot take the full course will be received for such time as they can give, and, as they receive due credit for all work done, they can resume the course at any future time.

Graduates and students of colleges, scientific schools, and other normal schools will receive credit by a transfer of records, and will receive the diploma of this school when they have accomplished the additional work needed for the completion of its course of study and training.

The essential elements in the qualifications of the teacher are personal character, scholarship, power of control, and skill in teaching. Fitness of character is demanded as a condition of admission to the normal school; its course of study is adapted to assure adequate scholarship; power of control and skill in teaching are developed and tested by observation and practice in its model and training schools.

SCHOOLS OF APPLICATION.

Training in teaching is essential to the success of the normal school.* The training school is the laboratory of the normal school, and it bears the same relation to preparation for the teaching profession that physical and chemical laboratories bear to the education of the physicist and chemist, and that field work bears to the education of the engineer. No array of libraries or of scientific equipment can in any degree take its place. The facilities for training offered by the New Hampshire State Normal School are unsurpassed. The school system of the village, consisting of primary, grammar, and high schools, carefully graded, and occupying rooms in the normal school house, is under the entire control and direction of the normal school for model and training schools.

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* "The theory of education has to do with principles, the art with rules. The theory is to be learned by professional study; skill in the art is to be acquired by practice in teaching. And grasp of principles in the science of education, as in all sciences, is greatly aided by subjecting these principles to the test of application.

"The prime requisites for success in teaching are capacity, scholarship, and experience, and the earliest experience should be under such careful inspection and guidance as will guard the pupil from loss or harm. To be most effective, this inspection and guidance should be by those who teach the principles of the science and the rules of the art, and the best and speediest success will be assured if to the instruction of the class-room be added the guidance of a perfect model; if one learn to do by doing what has been taught in its essential principles and illustrated by worthiest example.

"The necessity for training in the practice of teaching was early seen, and the Prussian law of 1819 formally requires the practice school in connection with the normal school. The first normal school on this continent, — the school at Concord, Vt., opened in 1823 by Samuel Read Hall [author of 'Lectures on School-keeping,' and principal of a teachers' seminary at Plymouth, N. H., 1837–39], — had a normal school connected with it, and the first state normal school, established at Lexington, Mass., in 1839, had the same; but, though the normal school system of the United States was inspired by the Prussian example, the law requiring a school for practice was not adopted. Hence usage has varied, and a large proportion of the normal schools of the United States have no such department. The lack is in some cases due to the location of the school; in some cases to local prejudice.

"It is safe to say that the tendency of opinion in the United States is in favor of schools of application, as model schools, or schools of practice, or both; and abroad the belief in the necessity for them is universal." — *From Report of Committee on Normal Schools of National Council of Education, adopted in 1885.*

Referring to the report from which this extract is taken, the Commissioner of Education for the United States says, in his report for 1884–85: "The opinion expressed in this report with reference to the necessity of a practice school, as a part of the complete organization of a normal school, is undoubtedly that which prevails wherever the training of teachers has been a subject of serious attention and practical endeavor."

As model schools, illustrating methods of school organization and management, and open to inspection, they are designed to teach objectively the characteristics of well-organized public schools. As training schools, they are used for teaching the practical application of the principles and methods previously learned through observation and instruction; from them classes are taken for lessons illustrative of methods of teaching; and in all their grades the pupils of the normal school are drilled in the methods of school government and instruction, under careful direction and criticism. This training is so carefully graded that it becomes one of the pleasantest features of the school, and gives such a degree of self-possession, such facility in the use of expedients, such readiness of resource, as enables the pupil to look forward with pleasurable anticipation to a work from which he would otherwise often shrink with dread. It takes the place of years of unguided experience, and in many cases makes all the difference between success and failure. Pupils, prepared for their work by previous study of principles, learn to do by doing under the conditions that will attend actual schoolroom work. Furthermore, this range of work decides, as nothing else can decide, the kind of school, whether primary, grammar, or high, to which the pupil-teacher is the best adapted, and in which alone the highest success is possible.

The subjoined course of instruction will show the range of the training.

COURSE OF INSTRUCTION IN THE MODEL SCHOOLS.

FIRST YEAR.

(Completed at the age of seven.)

Reading. First Readers (two), with phonetic chart, by sentence, word, and phonic methods combined.

Spelling. All words of reading lessons by sounds. Easy words having no silent letters, by letters.

Arithmetic. Counting, by objects, to 100, by 1's, 2's, 5's, 10's; reading numbers to 100; reading Roman numerals as used in reading-books.

a. All possible combinations of numbers in pairs, to form in succession the numbers 2, 3, 4, 5, 6, 7, 8, 9. (First year's work sometimes closes at this point.)

b. Combinations of numbers, represented by the digits, in pairs, as 5 and 6, etc., up to 9 and 9. Telling time by the clock; value of coins to one dollar.

Fraction $\frac{1}{2}$; expression of operations performed with numbers, as $6+5$, $12-6$, 4×2, $9\div 3=?$

Geography. Lessons in positions of objects; points of compass; drawings showing positions of objects; training to judge of distance; stories of travel, and object lessons on products of other countries.

Form. Surfaces and faces, curved and plane; edges, straight and curved; corners, square, blunt, and sharp; sphere, cylinder, cube. Constant reference to objects in all lessons.

Color. Resemblance and difference in color; distinguishing and naming the common colors.

Object Lessons. Distinguishing familiar objects by their names; observing and naming their principal parts.

Human Body. Distinguishing and naming the principal parts.

Animals. Conversational lessons on familiar animals.

Plants. Familiar talks with children about common flowers and plants, speaking of name, color, general shape, when and where found, odors, peculiar habits, if any, naming and distinguishing simple parts of plants, as root, stem, leaves, and flowers.

Drawing. Simple exercises with straight lines, on slates and paper, for training eye and hand.

Writing. Pupils' names. All the letters, large and small, on slates. Simple words and sentences.

Language. Conversational lessons on familiar topics, usually such as relate to home life and to play, and on familiar objects; short stories told by teacher, re-told by pupil; careful correction of errors in speech; complete statements required in all recitations.

Music. Rote songs, with careful attention paid to good phrasing, distinct articulation, and accurate pronunciation. Singing of the scale.

SECOND YEAR.

(Completed at the age of eight.)

Reading. Second Readers (two). Third Reader begun. Supplementary reading.

Spelling. Spell by sounds; also spell easy words in reading lessons, and short sentences, by letters; spell days of month and week; simple words written from dictation.

Arithmetic. Numbers to 100, adding each of the digits to 10, 20, etc., 11, 21, etc., 12, 22, etc., up to 100. Count by 1's, 2's, 3's, etc., up to 100, beginning by counting on to 1, 2, 3, etc. Thus, beginning with 3 and counting by 7's, we have 3, 10, 17, 24, etc. Much mental exercise in addition and subtraction, and simple work in multiplication and division. Written addition and subtraction, without reduction, at first; addition to thousands, with reduction; and simple exercises in written multiplication and division. In addition, introduce no columns longer than pupil can readily add, and *prevent all counting.* Decimal notation with whole numbers practically taught. Analysis of numbers: as in the number 87, how many units? 87; how many units besides the tens? 7; how many tens? 8. Fractions ½, ⅛, ¼. Common units of measurement, as foot, pound.

Geography. Plans of schoolroom, playground, neighborhood, molded and drawn to scale. Land surface, watershed; uses of mountains, streams, lakes; climate; stories and object lessons.

Form. Carefully review the work of the first year; plane figures; circle, square, triangle, oblong; lines according to shape, direction, relation; angles, right and oblique.

Color. Continue work of first year, and distinguish shades and tints.

Object Lessons. Continue work of first year, and describe objects by form, color, and uses; simple qualities of substances.

Human Body. Name and give uses of principal parts.

Animals. Continue work of first year, considering parts, uses, and habits; simple classifications.

Plants. Parts and fruit; nourishment and growth. Parts, uses, kinds of trees in vicinity.

Drawing. Dictation exercises, using straight lines; copying simple figures.

Writing. Writing pupils' names; writing, with pencil, short and familiar sentences on slate and paper, and short words and small letters in books, with pen.

Language. Work of first year continued; copying and forming sentences, and joining sentences into short paragraphs; use of capital and period in sentences.

Music. Continue work of first year; begin reading from modulator.

THIRD YEAR.

(Completed at the age of nine.)

Reading. Third Reader, in common type; supplementary reading.

N. B. — In the third, fourth, and fifth years, especially, the teacher should awaken the interest and cultivate the taste of pupils by reading to them. In all the grades pupils should be required to memorize choice selections.

Spelling. All the words of the reading lessons and new words used in other lessons; one written exercise each day.

Arithmetic. Three and four place numbers; all the fundamental operations with numbers from 1 to 1,000, carefully grading the work according to capacity of pupils, and omitting divisions requiring reduction; United States money; exercises with fractions, ½, ⅓, ¼, 1-5, ⅙, ⅛. Continue and extend exercises of preceding classes.

Geography. Review; physical map; civil divisions; the town, county, — its minerals, plants, and animals, its people and their pursuits and education; general view of New Hampshire and New England; the earth as a globe, and its motions illustrated; molding and map-drawing.

Form. Review; description and classification of plane figures.

Color. Hues; mixing colors.

Object Lessons. Form, color, size, material, familiar qualities, uses, and sources of things, and by whom made; properties and classification of substances, as animal, vegetable, mineral.

Human Body. Lessons showing need of light, food, heat, etc.; uses of blood; location and naming of organs of body; relation between plants and human body.

Animals. Naming principal parts, uses, and habits of familiar animals.

Plants. Simple lessons on plants in fall and spring, continuing work of second year.

Drawing. Exercises in dictation; object drawing, using straight and curved lines.

Writing. Copy-book.

Language. Work of preceding years continued; oral and written sentences describing objects in regard to form, parts, and color; reproduction, in pupils' own language, of stories read by the teacher; short, original stories suggested by pictures; attention to capitalizing and punctuation.

Music. First Music Reader, and chart; rote songs continued.

FOURTH YEAR.

Reading. Fourth Reader; supplementary reading.

Spelling. Spell words from all lessons, oral or by writing.

Arithmetic. Whole system of numbers; fundamental operations with unlimited numbers, but most drill on 3 and 4 place numbers, as most practical work is confined to these. Exercises of previous years continued and extended. Exercises involving common fractions, with one digit for denominator, and addition and subtraction of decimals.

Geography. Review; some points in physical geography, as the earth's crust, land and sea, atmosphere, winds, dew, clouds, rain, snow; plants, animals, and people of various zones; United States and North America in general outline; molding and map-drawing.

History. Stories of the lives of eminent historical characters; instruction mainly oral.

Form. Review lines, angles, and polygons, giving special attention to training the judgment in classification.

Color. Mixing colors; formation of shades, tints, and hues. Harmony of colors.

Object Lessons. Continue work of previous years.

Human Body. Continue work of third year; description of principal organs, and structure and function of body and of its principal parts; effects of alcohol and tobacco.

Animals. Continue work of third year, extending its range; modes of life, and adaptation of structure to uses.

Plants. Parts of flowers; classification into the most common families.

Drawing. Exercises in dictation and object drawing; drawing of simple geometrical figures, with exercises in repetition to cover surfaces.

Writing. Copy-book, writing from reading and other lessons, and writing spelling lessons.

Language. Work of previous years continued and expanded; descriptions of objects by qualities and uses, the matter being usually given in oral lessons; reproduction of stories read by teacher; simple narrations; letter-writing, with special attention to the form of the letter; systematic additions to child's vocabulary, with exercises in the proper use of the words added; punctuation.

Music. Songs and hymns taught through the course; taught to read music from charts during third and fourth years; First Music Reader concluded.

FIFTH YEAR.

Reading. Fourth and Fifth Readers. Supplementary reading: Longfellow and Whittier, — shorter poems; Hawthorne, — Wonder Books, Tanglewood Tales; L. M. Alcott, — Little Women; Hans Christian Andersen, — Fairy Tales.

Arithmetic. Common and decimal fractions; exercises with compound numbers of denominations familiar to the pupils, and with metric measures of length.

Geography. New Hampshire, New England, United States, and North America.

History. Great historical events; instruction mainly oral, supplemented by optional reading by pupil.

Language. Narrations; descriptions; letter-writing, with special attention to correct forms of letters of various kinds; exercises in classifying words as parts of speech, not treating subdivisions; use of apostrophe and formation of plurals; exercises of fourth year on vocabulary continued; exercises in derivation of words, and especially on changes of meaning effected by use of suffixes and prefixes; punctuation.

Drawing. Facts of form; outlines of objects on the level of the eye; enlarging and reducing drawings.

Music. Increased attention to reading music; simple exercises arranged for two parts; Second Music Reader.

Writing; spelling.

SIXTH YEAR.

Reading. Fifth Reader. Supplementary reading: Whittier, — Snow Bound; Irving, — Sketch-Book, Bracebridge Hall, Alhambra; Abbott's Histories, Lamb's Tales from Shakespeare.

Arithmetic. Metric System (without reduction to other measures); compound numbers, omitting denominations not in common use; more extended practice with common and decimal fractions; special attention throughout the course to applications to business.

Geography. North America, Europe, Asia, Africa, in general, with comparative study of land and water masses, and mathematical geography.

History. Brief outline of United States History; instruction mainly oral, supplemented by reading of the pupil.

Language. Compositions on subjects from oral and text-book lessons. Stories seen in pictures. Description of animals, plants, and persons observed by the pupil, from questions asked or outlines drawn up by the teacher. Exercises in changing forms of sentences and in use of synonyms. Letter-writing, with special attention to subject matter; replies to letters received; letters written according to time present or past, place near or remote, and circumstance stated by teacher.

Drawing. Objects singly and in groups in different positions; geometric design.

Music. Second Music Reader completed. Singing in two and three parts.

Writing; spelling.

SEVENTH YEAR.

Reading. Fifth or Sixth Reader. Supplementary reading: Whittier, — Tent on the Beach, Bridal of Penacook; Hawthorne, — Snow Image, and Twice Told Tales; Scott, — Lady of the Lake, The Talisman, Quenten Durward.

Arithmetic. Simple proportion, inductively presented, with some of its easier applications; percentage, as bills, commission, profit and loss, simple interest, and bank discount; simple examples in partial payments by the United States rule.

Geography. Starting with the earth as a whole, proceed analytically to its parts, with detail corresponding to the importance of the countries studied; special study of United States, and of North and South America.

History. Selected epochs of general history, with study of leading historical characters; instruction oral, supplemented by reading of pupil. The main object of the year's work is to develop a taste for historical reading.

Language. From brief general outlines, previously prepared, mainly by the teacher, pupil writes, — 1. Description of inanimate objects, as minerals, manufactured articles, etc. 2. Compositions about persons of various occupations. 3. Compositions about animals, foreign and domestic, from pictures and from descriptions. 4. Compositions about useful plants, as *wheat*, *cotton*. 5. Descriptions and narrations, founded upon pictures. 6. Compositions on mental pictures of memory and the imagination, elements suggested by teacher at first, and later, entire picture suggested by a word, as *home*, *skating*. 7. Oral lessons, introductory to the use of a text-book in grammar. 8. Language lessons and composition, with use of a text-book. Special attention to changes in form of expression, and to the use of synonyms.

Drawing. Principles of perspective; objects in different positions; in decoration, principles of design.

Music. Third Music Reader, three-part songs, and bass clef.

Writing; spelling.

EIGHTH YEAR.

Reading. Fifth or Sixth Reader. Supplementary reading: Longfellow, — Hiawatha, Courtship of Miles Standish; Hawthorne, — Mosses from an Old Manse; Scott, — Kenilworth, Ivanhoe; Tennyson, — The May Queen, Charge of the Light Brigade; Dickens, — Christmas Carol; selections from American authors, giving a brief outline of American literature.

Arithmetic. Ratio and proportion, simple and compound; insurance; interest, simple, annual, and compound, and partial payments; taxes; duties; partnership.

Geography. First term, Europe; second term, Asia; third term, Africa and Oceanica, and general review of the whole course.

History. History of the United States. First term, colonial and revolutionary periods; second term, constitutional period and the period of later development; third term, the civil war and reconstruction.

Physiology. Elementary treatment of the subject, with special reference to the effect of alcohol and narcotics.

Throughout the grammar-school course, the objective teaching of the preceding years is to be continued, with such selection of subjects, and by the use of such methods of instruction, as will secure the best preparation and basis for the scientific study of the high-school course. Thus, lessons on plants are to prepare the way for botany, and an objective course on physical phenomena is to assure a clear intellectual basis for the later study of physics.

Language. 1. Writing abstracts of lessons. 2. Preparation of outlines and writing compositions upon them. (*a*) Description of places. (*b*) Accounts of journeys. (*c*) Biographical sketches of celebrated persons. 3. Changes of poetry to prose. 4. Letter-writing in its various forms, and practice upon simple business forms, as bills, receipts, notes, etc. 5. Grammar, with use of a text-book.

Drawing. Geometrical problems, and plans drawn to a scale; objects at different angles and inclinations; simple designs; light and shade. (The geometric drawing in the sixth, seventh, and eighth years is to be based upon previous lessons in form.)

Music. Same as eighth year.

Writing; spelling.

NINTH YEAR.

Reading. Some book appropriate for elocutionary drill: Shakespeare,—Julius Cæsar; selections from English authors, giving a brief outline of modern English literature.

N. B.—Not all the books named in the course of supplementary reading in the various grades are to be studied in the schoolroom, but these, and more, if possible, are to be read under the direction of the teacher.

First Term. English Grammar; Algebra; English History.

Second Term. English Composition; Algebra; English History; Physiology.

Third Term. English Composition; Arithmetic (exchange, accounts, stocks and bonds, banking, insurance, square and cube roots, with practice of every sort for repetition and review of the whole course, and drill on common business forms); Physiology; French History.

Drawing. Geometrical drawing; historic forms in design; light and shade; color.

TENTH YEAR.

First Term. Latin Lessons; Roman History; Geometry; Physics.

Second Term. Latin Lessons; Greek History; Geometry; Physics.

Third Term. Latin Lessons; Geometry; Book-keeping.

Drawing. Working drawings and problems in projection; objects in oblique and angular perspective; historic ornament; color; application of plant forms to designs.

ELEVENTH YEAR.

First Term. Latin,—Cæsar; English Literature; Chemistry; United States History; review of Arithmetic.

Second Term. Latin,—Cæsar; English Literature; Chemistry; United States History; review of Arithmetic.

Third Term. Latin,—Cæsar; Civil Government; Botany; review of English Grammar. (The class graduating this year has taken three years in Latin, reading Virgil the third year.)

Drawing. Elements of building construction; natural forms in light and shade; study of plant forms from nature, and study of the scroll.

Music. The ninth, tenth, and eleventh years, practice of chorus music and other musical exercises.

Exercises in Composition, Drawing, Writing, Reading, and exercises in applications of Arithmetic throughout the course. Special subjects shall, from time to time, be treated by oral lessons or lectures. Two or three selections of literature of considerable length, typical of the best authors and styles, shall be carefully memorized and recited each term.

There shall be much writing throughout the course above the lower grades on subjects connected with school work, and careful attention shall be given to the selection of such reading, and the adoption of such modes of reading, as will cultivate purity of style and clearness and purity of thought.

CONDITIONS OF ADMISSION.

Gentlemen must be seventeen years of age at entrance; ladies, sixteen. Candidates must present certificates of good moral character from some responsible person, and declare their intention to fit themselves to teach. They must be prepared to pass a satisfactory examination in arithmetic, through fractions; in geography, upon general principles of mathematical geography as laid down in common-school text-books, in general upon the continents, and in more detail upon the United States and New England; in grammar, reading, and spelling.

They must acknowledge their obligation to comply with all the regulations of the school, and the earnest attempt to fulfill their obligation in good faith is the condition of continuance in the school.

All pupils should be present the first day of the term, though in case of necessary absence pupils will be admitted later.

Graduates from a high school or academic course of three or four years will be admitted without examination, on presentation of certificate or diploma.

Those who purpose entering the school are requested to notify the principal of their intention as early as possible, that suitable arrangements may be made for them.

PROMOTION, GRADUATION, EMPLOYMENT.

A definite standard of proficiency in studies is demanded for promotion from class to class, but aside from this it is not found necessary to make distinctions of scholarship. Faithful attention to duty for its own sake is the surest passport to the honors of the school.

Students are graduated when they have satisfactorily completed the course of study, and upon graduation they receive a diploma. This diploma is a certificate of admission to the profession, and is received throughout the United States as evidence of professional character.

Graduates of the school are sought for good positions, and the demand for them is usually beyond the supply.

EXPENSES.

An incidental fee of $2.00 is due from each pupil at the beginning of each term. A part of the text-books required are furnished free, and others may be purchased at the school at reduced rates.

Every student should bring a Bible and a good dictionary, and, for reference, such standard text-books as have been studied.

Students living on the line of the railroad, and wishing to board at home, can obtain tickets for the term at reduced rates. Apply to the principal for particulars.

Board at Normal Hall is at the rate of $3.75 per week. This includes current expenses of living, — board and room, light, heat, and washing of a limited number of pieces. For any period less than half a term, the board will be $4.00 a week. Those who wish to room alone will be accommodated so far as possible at $4.00 a week. Students can remain during the short winter and spring vacations at the price of table board merely.

On the first day of the term one half of the board bill for the term is due from each pupil boarding at the hall, and the same amount at the middle of the term. These advance payments are necessary to the economical management of the hall.

Rooms may be obtained for self-boarding at reasonable rates. Information will at any time be given, and all desired arrangements made by the principal.

NORMAL HALL.

Pure spring water is carried to each story in the hall, and all the conveniences incident to it, including bath-room, with constant supply of hot and cold water, have been supplied. The building is heated by steam.

The rooms accommodate two each, and are carpeted, furnished, heated by steam, and lighted by lamps. Students are recommended, however, to bring their own lamps.

Each boarder is required to bring bedding, towels, napkins, and napkin-ring, clothes-bag, and toilet soap. Each one will want, ordinarily, four pillow-cases, three sheets, two blankets or their equivalent, and one coverlet for a double bed. It is required that every article that goes to the laundry be distinctly and indelibly marked with the owner's name.

Great care has been taken to secure the best sanitary conditions in schoolhouse and boarding-house; the general good health of the school, and the remarkable improvement in the health and strength of some, attest the success of the attempt.

LIBRARY AND APPARATUS.

The school is equipped with apparatus for teaching the sciences, and is furnished with an excellent library of reference books. The public library is easily accessible to the pupils and is well supplied with general literature.

GOVERNMENT AND DISCIPLINE.

In a normal school but little need be said about discipline. Nearly all its students come with well-developed powers of self-control, and with an earnest purpose worthily to accomplish a noble aim. Those who have not this preparation of character and purpose should not apply for admission. Regularity of attendance and loyalty to the school in all its designs and interests are exacted as indispensable conditions of membership.

Students are requested to come provided with warm clothing, *flannels included*, and with walking-shoes, so that they may safely exercise in the open air in all weathers; and young ladies are especially requested to provide themselves with a school dress of plain material, and plainly made, loose enough in the waist, and short enough, to admit of perfect freedom of movement in walking and in all exercises.

The *object*, *means*, and *methods* of the normal school may be summarized as follows:

OBJECT OF THE SCHOOL.

The thorough training of teachers for their professional labors.

MEANS.

1. Apparatus for illustration of the various branches of science, and for the practical training of pupils in the care and use of apparatus.
2. A library, carefully selected, to facilitate the study and guide the researches of members of the school.
3. Model and training schools, illustrating the best methods of primary, grammar, and high school organization and instruction.

METHODS.

1. Thorough instruction in the branches of study included in the course, with special reference to modes of teaching the same.

2. Cultivating, by modes of class-work adopted, the skill in the use of apparatus, and the facility in illustration, the self-reliance, the power of logical thought and of easy and correct expression, and the style of address, necessary to the successful teacher.

3. Study of mental and moral philosophy in their applications to self-culture and to education.

4. Study of the history and theory of education, and of modes of school organization, discipline, and instruction.

5. Practice in conducting recitations, and in giving oral lessons before classes and before the school, under the direction and criticism of the teachers.

6. Practice in teaching in the training schools, under the instruction and criticism of the principal, and of the teachers of the training schools.

The means for directly professional training increase from term to term, and, as may be inferred, the benefits to be derived from continued connection with the school are correspondingly increased. Though all effort is made to render every connection with the school profitable, students will find it for their interest to enter upon the course with the purpose of completing it.

SUGGESTIONS TO CANDIDATES.

1. Read all the statements of this circular. Carefully examine the course of study, and decide how much of it you have thoroughly accomplished, recognizing always the difference between the knowledge required by a teacher and that required by one who is merely expecting to become a general scholar.

2. Do not be too anxious to enter advanced classes. All classes have full work, and there will be no time in any class to *make up* back studies. Most of those who find the work difficult suffer from lack of thoroughness in elementary training, and in many cases this lack is not previously suspected. A work that is to be done but once in a lifetime should be done well.

3. Bring with you testimonials from some responsible person as to your moral character.

4. Bring with you, as useful for study or reference, all the text-books you have. Every pupil should be provided with a Bible and a good dictionary, and, if possible, with a good reference atlas.

5. Come expecting to work faithfully and honestly, to make study your first and only aim while here, prepared to make many sacrifices for your own good and the good of the school.

Friends of education are requested to bring this circular to the notice of those whose wants the normal schools are designed to meet; but none should be advised to enter who are lacking in the physical health, the mental capacity, and the moral character, necessary to success in the profession. It must be remembered that there are those of whom no amount of instruction and no thoroughness of training can make good teachers. *Application for board and for further information should be made to the principal.*

APPLICATIONS FOR TEACHERS.

There are usually connected with the school, or known to the faculty, persons well qualified to teach, and willing to accept suitable situations. Letters in reference to teachers will be promptly answered, and, if applications are definite enough, teachers can usually be supplied. Applicants are requested to state:

1. Whether a male or female teacher is required.

2. The time of beginning and the length of the term, or of the school year, and the probabilities of continuous employment.

3. The wages, and the price of board.

4. The route of travel, and the approximate expense, from Nashua, Concord, Littleton, or Lancaster, if either of these places is on the route.

5. The grade of school.

6. If ungraded, the number of pupils, and the most advanced studies; also whether most of the pupils are primary or advanced.

7. If there is any special difficulty as regards discipline or instruction, the character of this difficulty.

8. Whether traveling expenses, in whole or in part, will be paid. Distances to which teachers may be sent are so great that these

expenses are sometimes paid, and the ability to supply a teacher often depends upon this.

Applications for teachers should in all cases be made as early as possible, in order to anticipate the engagement of the best. The demand usually exceeds the supply.

ANNUAL REPORT

OF THE

SUPERINTENDENT

OF

PUBLIC INSTRUCTION.

BEING THE

FORTY-FIRST ANNUAL REPORT UPON THE PUBLIC
SCHOOLS OF NEW HAMPSHIRE.

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

REPORT.

Office of Superintendent of Public Instruction,
Concord, N. H., June, 1887.

To His Excellency Charles H. Sawyer, Governor of New Hampshire:

Sir, — I have the honor to transmit through you to the General Court the forty-first annual report of the schools of the State, the same being the twentieth report since the establishment of this office, and embracing, —

I. Extracts from reports of city superintendents and town committees.
II. Statistical tables.
III. Discussions and recommendations.
IV. Miscellaneous matters.
V. Report of the State Normal School.
VI. Report of the State Teachers' Association.
VII. Educational addresses.

Respectfully,

J. W. PATTERSON,
Supt. of Public Instruction.

EXTRACTS

FROM

CITY AND TOWN SCHOOL REPORTS.

ALSTEAD. — E. M. SMITH, GEO. A. MAYO, S. A. MITCHELL.

INCREASED SCHOOLING. — UNION OF SCHOOLS.

There have been twenty-nine weeks of school available to all the scholars. This is several weeks more than the average for previous years. Although a few terms have not proved satisfactory, the schools have, in the main, been successful. With the best teachers, circumstances often make success very uncertain. Conveyance has been furnished to those living more than one and one half miles from school, and, in some instances, within that distance.

Increased schooling has opened the way for better attainments by the pupil. With only two terms per year, it has been painfully apparent to every interested observer that much of the work was lost through neglect to study during the long vacations.

It is a low estimate that on an average one fourth of every term is consumed in recovering lost ground. With an additional term, and shorter vacations, at least twice the work should be accomplished, and this, with proper effort, may be confidently expected.

During the long interval between terms, regular and systematic study has been the exception, not the rule; and it is beyond the reach of successful contradiction that the laborer in any department of human effort loses dexterity and skill by long-continued inaction.

Again, attention has often been directed to the number of very small schools; and the propriety of supporting those which could reasonably be united has often been questioned, since larger schools tend to increase interest and awaken more fully the spirit of individual emulation. The quantity of work could thereby be increased and the cost diminished. Larger schools also furnish better opportunities for the more regular grading of school work, — a very desirable object to accomplish, — that the pupils in our schools may not be far outstripped by those in the preparatory courses of our higher institutions of learning, but proceed upward by regular and systematic steps, and according to some well-arranged plan.

System is certainly not less important in study than in any other department of labor.

We believe this practicable in its application to the common English branches, although the higher branches, as pursued in the schools by those who have not the opportunity for a more extended course, must necessarily be left largely to the option of the pupil, and decided by the particular wants and plans of each.

Let the work of every term be made a tangible, solid, and indestructible foundation from which to build for each succeeding term, leaving, if possible, no problem unsolved, no principle misunderstood, to be the source of embarrassment at each succeeding step.

Troubles, doubly severe, will beset the path of the student if the foundations are not thoroughly and securely laid.

Parents, teachers, pupils, citizens, all, let there be a *unity of effort* in the support of our schools, through which, alone, the best interests of the town can be promoted and our duty performed.

ALTON. — Oliver J. M. Gilman, Nathaniel Stevens, Phineas Wheeler.

CO-OPERATION OF PARENTS. — USEFUL LIFE AND A HAPPY DEATH.

Your committee would state that, in their judgment, these schools have generally been taught by competent instructors, and that a most desirable and satisfactory progress has been made during the year. There have been a few cases where there seems to have been a lack of adaptation for the work of teaching and governing.

The co-operation of parents has much to do with the success of teachers, and we would urge upon them the necessity of visiting the school in which their children are instructed, in order to satisfy themselves by personal observation as to the progress made and the condition of the school, also to speak a few encouraging words, for there is nothing that inspires the ambition of a teacher like words of sympathy and encouragement from parents. Encourage your children to study at home, and assist them all you can. See that they are at school in season for the opening exercises, and do not keep them at home a single day unless you have a valid cause, for no school can be successful unless the scholars are prompt and regular in their attendance and interested in their studies. If we would have better schools we must all have more interest in them.

We are grieved to say that death has again entered the ranks of our teachers. Miss Ada E. Mooney died on the third day of January, aged thirty-nine years. She was a lady of excellent scholarship, and had taught in this town more than twenty years. She crowned a life of usefulness with a death of fervent faith, and leaves a grateful memory to be cherished in the hearts of her many friends and pupils.

Your committee have individually and collectively visited each school at the commencement and again at the close, and have made such suggestions as they thought proper for the interest of both teacher and scholars. Of the various branches that have been taught, physiology and geometry have received more than the usual amount of attention. One hundred and seventy-three scholars have practised writing. The books have been very neatly kept, and are free from blots. The registers show a list of 109 names of scholars who have not been absent or tardy a half-day of a term.

Two hundred and seventy-two visits have been made by parents and citizens during the year.

ANDOVER. — George W. Stone, Henry W. Kilburn, Ira Loverin.

WORK UNDER THE NEW SYSTEM.

Since the report of your last superintendent the "new school law" has gone into effect, and a new order of things has been inaugurated. The separate school districts have disappeared and we now have a single school district comprising the entire town. A school board consisting of three persons chosen to serve for one, two, and three years, respectively, takes the place of the superintending and prudential committees. The power to raise money, locate and build schoolhouses, rests in the people of the town acting as one district, subject, of course, to certain provisions before in force, and these are substantially all the changes necessarily made by the law. It is the intent of the law to give greater freedom of action to the people and their agents — the school board — than was before possible. It permits the school funds to be apportioned in such manner and for the benefit of such localities as the board may deem best for the interests of all, but the board has no authority to build schoolhouses or to expend any money even in repairing them, except so far as repairs may be made with the five per cent allowed by law. The law does not require that a single school be abolished. Undoubtedly in most towns the spirit of the law will best be carried out by decreasing the number of schools, while in others it may be necessary to increase the number in order to secure the best results. We, therefore, recommend that a new schoolhouse be built at East Andover upon some suitable location, on or near the highway leading to Tucker Mountain. A location here is much more desirable than the present one, which is near the railroad, depot, and stores, and will better accommodate the scholars coming from Tucker Mountain, should this district be united with East Andover.

The superintendent under the old law usually has received from the town seventy-five dollars for his services. In addition to performing these services the school board under the new law has been called upon to hire the teachers, take charge of the schoolhouses, and, in managing the prudential affairs of the district, perform the services heretofore rendered by a dozen or more prudential committees either gratuitously or for such compensation as they might see fit to take. We have charged you one hundred dollars. This has been paid from the school funds, and not by the town. In 1885, as shown by the report for that year, the scholars living in one of the wealthier districts received thirty-one weeks of schooling, while many in the less favored districts were getting only seventeen and eighteen weeks. This year no school has had less than twenty or more than twenty-five weeks. The scholars in eight of the old districts have this year received more schooling than last year, in one the same, and in only two less. We have no means of ascertaining the amount of money in the hands of the prudential committees for the year 1884, but assuming that it was an amount equal to that unexpended in 1885, it has cost six cents per week less to run the schools this year than last, $75 having been saved by uniting Kearsarge with Cilleyville. By sending the advanced district scholars in Andover Center to Proctor Academy at an expense of $69.75, we have been enabled to get along with one teacher in that school, thereby making a saving of about $75 to be apportioned among the other schools.

With one or two exceptions we have had an efficient corps of teachers, who have given good satisfaction, and the progress made has been all that could reasonably be expected. We have endeavored to aid the teachers in the discipline of their schools by assuring them that wherever we possibly could we should sustain them in whatever means they might think proper to adopt in maintaining good order. We believe that the difficulties in the way of maintaining discipline will disappear as soon as disorderly pupils understand that they have more to fear from the school officers than the teacher, and that whenever in consequence of deserved punishment their parents give encouragement by taking them from school, punishment will be meted to the parent as well as to the child. As an indication of the interest manifested by parents, we refer you to the tables showing the number of visits. In one district, however, where the school was equal, if not superior, to any we have ever known in town, there was a fault-finding disposition on the part of some that was uncalled for, though many gave the teacher earnest support.

ANTRIM. — Morris Christie, John E. Hastings, Anson Swett.

NEW SYSTEM. — LOSS BY ABSENTEEISM. — A HIGHER GRADE.

Your schools have been consolidated in response to the recent change in the laws of the State. Six schools have been maintained, and provision made for several scholars in adjoining towns. By this arrangement better advantages have been secured for our scholars than when we had more schools. The opinion of your school board is, that there cannot be less schools for the good of all the scholars. One school has three departments, the others one each. In the primary department the pupils were required to be present one hour and a half each half-day. We were pleased with the change, and recommend that all teachers of children under fifteen years of age give lessons of such proportions that they can be learned in school hours by close application. Our teachers were from this town, with two exceptions. They gave evidence of faithful work. We do not believe that all persons who possess the requisite book knowledge are competent teachers. Many worthy persons cannot be employed for the reason that they do not possess the necessary tact. Those only who have the proper qualifications should be employed at any price. That a poor school is worse than none, is an axiom. Primary schools demand the best teachers. The work well begun is half done.

The attention of parents is called to the great loss of time by absence. More than sixteen hundred school days were lost during the past year in this way, which is a loss to our schools of one tenth of the school money, reckoned at what we pay per week for tuition in other places. An epidemic of whooping-cough which prevailed during the last half of the schools may be offered as a reason for this.

Allow us to urge greater care for your children. Your presence, frequently, in the school-room, encourages both teacher and scholar. A small per cent of the parents have been in a school within the past year. Your sympathy and encouragement would do very much toward placing your schools on a proper basis. Try it.

There should be a higher grade of school than we have, where your sons and daughters could have a practical business education at light expense to them, where all in town could be accommodated. Without such facilities the majority must be deprived of what is very much needed. A very few, comparatively, wish to obtain a collegiate education, but all ought to be fitted for the ordinary business of life. Educate your children near home. Have a room where the proper literature of the day is furnished. Then spend your evenings at home, reading to your children, till they can read to you, and you will find education, like sunshine, beneficial to all interested.

AUBURN.— Wells C. Underhill, Andrew F. Fox, Daniel H. Webster.

ABSENTEEISM.

An effort was made to reduce the number of schools to six, but circumstances beyond our control prevented the success of the undertaking. A majority of the terms of school have been taught by teachers of former years; all but two terms by teachers of previous experience.

We are satisfied that the teachers have very generally tried to do their best, and for the most part very satisfactory results have been obtained. If satisfaction was not given in most of the schools, it is believed that the result must have been due to a want of co-operation on the part of parents, or to some cause other than a lack of interest on the part of teachers. Whatever criticism we have had occasion to make upon the discipline or deportment of the schools has been made to the teachers themselves. As under the present system teachers are employed by the school board, we think further reference to their merits or demerits is not called for.

The attention of parents is called to the large number of cases of absence reported in the registers. We have no doubt that in many instances it was necessary for the pupils to remain at home, but we fear that the convenience of parents and the desire of the children are too often consulted. Punctual attendance cannot be secured without the united effort of parents and pupils. It should *not* be prevented unless absolute necessity demands it. We also regard the frequent visiting of schools by parents as a matter of great importance, and regret to see so few such visits recorded in the registers. As the remarks of one of the teachers, made in her register upon the two last-mentioned subjects, are so apt and concise, we will take the liberty to quote them here.

"It is a significant fact, that of the forty-one visits the first term of the school, only three were from parents, and only six were from those who could be considered either parents or guardians."

When parents will interest themselves sufficiently in the school work of their sons and daughters to come and see what use they are making of their time in school, they will not be so likely to allow them to remain away from school for very trivial excuses, such as, they were required to spend more time on a lesson if it was not learned when called for, or they were required to close the door quietly, or they were corrected for calling after people or using rough language on the school grounds.

We are sorry for those pupils who are so unaccustomed to correction and obedience at home, that they cannot submit to it under any circumstances anywhere.

But few boys and girls of the present day exhibit sufficient perseverance to prepare themselves for very extensive usefulness in the future, if their highest aim is "to clear the law" in attending school. Ill health in five different families made an excuse for extended absence from school, but *indifference* occasioned a much larger number of absences.

The unexpended school money of last year has been used for the benefit of those schools located where the money was raised, otherwise the schools would have been of the same length.

BEDFORD. —NATHANIEL B. HULL, CHARLES B. BEAL, ARTHUR W. HOLBROOK.

PRACTICAL REMARKS.

Ten schools have been supported, and three terms have been held in each; spring term, ten weeks, fall term, nine weeks, and winter term, ten weeks, making twenty-nine weeks for the year, which will average as many weeks as the preceding year. They are generally in a good condition, and have made good progress. In some we have noticed decided improvement in instruction and discipline. Others have not been quite up to the standard we would like. The failure of parents to co-operate with teachers is a barrier to good discipline, and their readiness to accept the colored statements made by the children concerning the teacher's inefficiency or partiality creates discord in the school and therefore injures its usefulness. We have had but few complaints, and have not been called to settle any case of discipline.

Five of the teachers have taught for the first time, and some have been very successful. Others have had large experience. They have labored hard for the success of their schools, but, of course, with different results. In our opinion not one has labored merely for the money, but all have tried to do their best. We have been satisfied with their work, with but a few exceptions. We have secured the best teachers we could, and, taking into consideration that we were acquainted with but few, have been in a measure successful in our efforts. All have shown a willingness to accept all suggestions offered by members of the board for the management of the schools, and their relations with the members have all been very pleasant. We believe in retaining the old teachers as far as satisfactory the coming year.

Only a few of the registers have been fully and correctly made out. We would request all teachers the coming year to be very careful in keeping them, as they contain full directions, and we shall not accept them until properly made out as required by law.

The attendance has not been what it should be, and for the winter term has been very poor, owing to sickness and bad traveling; but these are not the only reasons for absences, and we would request the parents to require of their children regular attendance at school unless sickness prevents. The loss to a child by absence is not to that one alone, but to the whole school. The whole number of scholars registered is 226; of these 125 are boys, 101 are girls. The number between the ages of five and fifteen is 206.

It has been thought by some that we should have consolidated some of the schools, but, believing it strongly against the wishes of those who would be interested, have attempted nothing of the kind.

We entered upon our duties at the beginning of the year with but little knowledge of the schools; in fact, our duties were almost wholly new to us. It being the first year of the new school system and a majority of the people being against the change, it has been somewhat harder for us to discharge our duties acceptably, but we have endeavored to do what we thought for the best, and to maintain the standing of the schools. The town system has been upon trial for a year, and it is for the people to judge whether it is any improvement as compared with the old. We think, as far as we can judge, the schools will compare favorably with those of former years, and hope in the future they may attain a still higher standing. We have endeavored to spend the money as economically as possible, and have furnished the schools with the best teachers we could. We may have sometimes made mistakes, as the best are liable to do, and if we have not satisfied the people in some respects they must set it down as a lack of knowledge or judgment.

BELMONT. — Joseph Plumer, F. L. Gerald, John M. Sargent.

In entering upon the discharge of our duties we were not unmindful of the increased responsibility resting upon us, growing out of the recent change in the school laws, by which the entire school interests are placed in the hands of three persons. It was easy to see that some changes from past practices were necessary to the welfare of the schools, but to make these changes successful was not an easy task. In deciding where schools should be held, when, and how much money should be appropriated to each, we have endeavored to conform to the requirements of the law, "giving to all the scholars of the town as nearly equal advantages as may be practicable." (Laws of 1885, chapter 43, section 6.) The changes made were in consolidation, and in appropriating the school money.

CONSOLIDATION.

Number 8, which had but two scholars, was united with No. 7; No. 10, with four scholars, united with No. 9; No. 11, with one scholar, No. 4, with eight scholars, and No. 6, with five scholars, were united with No. 5. The advantages gained were an average increase of two weeks in length of schools over last year, and of four weeks over the average for the last six years. It also avoided the wasteful expenditure of money in maintaining small schools. It made possible the division of the village schools, which had outgrown the limits of their schoolhouse, thereby relieving their crowded condition, and rendering ,the grading more perfect. The schoolhouse, consisting of two rooms, seats seventy scholars. The whole number of scholars reported last year was eighty-four. It will be seen that the capacity of the house was in no way suited to the school. By uniting, as above mentioned, ten scholars were added, and the schools divided, making three instead of two as formerly.

In appropriating the school money, it has been regarded as a common fund for school purposes, and schools have been kept in eight places, each having two terms of ten weeks, commencing April 26 and September 6. The effect of this method was to give every scholar in town an equal amount of schooling. In every case where parents have been obliged to send away from their own schoolhouse they have had access to more weeks of school (in one case it was doubled), and in most cases to better schools than formerly, which we think ought to compensate them for their extra trouble and expense.

TEACHERS.

No one thing connected with the administration of our schools is of more importance than the selection of good teachers. Failures rarely result from lack of necessary literary attainments, but generally either from inability to control the school, or to impart instruction in such a way as to interest and impress the pupil. Teaching is a profession, and demands on the part of those who enter it special preparation. The time is past when the idea obtains with sensible people that a fair amount of muscle and pluck is all that is needed to teach school. The teacher's work requires a ready and hearty sympathy with child life, — the power to wisely control and direct the rash and impulsive natures under their care. The laws governing the development of mind should be understood as the underlying principles of all true teaching.

The supply of good teachers is always limited, and when the required number is found, the small wages which we are able to pay will not always secure their services. In making selections and assigning places we have tried to have the qualifications of the teacher adapted to the wants of the school. "The right teacher in the right place" always produces pleasing results. Our teachers have labored with fidelity and zeal. Generally speaking, parents have encouraged and assisted them, scholars have been attentive and obedient, and we believe, with a single exception, our schools during the past pear have been doing good work.

Twenty-two years ago the chairman of this board, in his report, suggested that a union of districts was necessary to the best interests of the schools. Nearly every committee since then has referred to the same thing. During this time only one change has been made. If such a change was necessary then, it certainly is now, as the number of scholars in the outlying districts has decreased by one half. In order to do this, two or three schoolhouses must be removed. We are convinced that the best results can never be realized from our schools until some changes of this kind are made.

BROOKLINE.—A. S. Wallace, G. W. Bridges.

VISITORS.

Not as many of our people have visited the schools as the committee wish. We think every parent ought to visit, at least once a year, the school which his own child attends, while those who have no children in school should visit them if for no other purpose than to see for themselves how the committee are spending the school fund.

The late Hon. James O. Adams used the following language in his report while superintendent of schools in the city of Manchester; it being so applicable we desire to present it. He said: "We have intelligent and accomplished teachers, we have talented and ambitious pupils, we have school officers who give their time and efforts to the cause, but not one of these agencies, nor all combined, can insure success while home influence is not right. As the family, so will be the school, so far as any influence is exerted. As believes the father or mother, so acts the boy or girl when they come with the impress of home upon them into the school-room. Let us urge, then, upon the parents of our school children the importance, the absolute necessity, of encouraging both teacher and pupil. Do not condemn, do not even criticise the school you have never seen. Teach your children obedience at school as well as at home. Let them understand that for a just reproof or chastisement at school they shall have no false sympathy. Aid your children at home; speak of the school as a pleasant thing; allow no trivial object to keep your children from the school-room; sympathize with them in their trials and efforts for improvement. Do this, and you will contribute to the success of the teacher, to the progress of your children, and to the permanent good of the schools of the town."

CAMPTON. — T. S. Pulsifer, William A. Smith, C. W. Johnson, Jr.

GOOD WORK WELL DONE.

The schools as a whole in this town have been successful and profitable. The teachers we think have used their best endeavors to do justice to each pupil, and as a general rule the scholars have shown a marked improvement in the several branches taught. Scholars are not all alike; some are more studious and attentive than others, and apply themselves more closely, and the result is very evident to the most casual observer, or visitor. We think if parents would take more interest in visiting their schools, it would be a great help, not only to the teacher but also to the scholar. It acts as an incentive to the pupil, also a help to the teacher in governing the school. We are apt to trust too much to the teachers. We select and place them in the school-room with our children and there we leave them for one fourth of the day without one thought how they are getting on, or whether they are even in the school-room or in some other place in the vicinity. We could name some districts where this has been much too often the case the past winter. The school-room is the place for every scholar during school hours.

In regard to the several school districts in town, we have endeavored to unite them in a way that would give the greatest number of scholars the benefit of the money expended.

There have been no schools in districts Nos. 7, 13, and 14; but the scholars in said districts (if any) have had the privilege of attending the school located nearest to them. District No. 1 was classed with No. 14; No. 3 with No. 12; No. 5 with No. 6; No. 8 with No. 10, and the time of the commencement of each school was so arranged that the scholars of each district might have the benefit of both schools, thereby receiving nearly double the number of weeks schooling. We are sorry to say that some of the people have not availed themselves of this privilege, failing to see the benefit their children might have in the increased length of the schools, preferring the old district plan. We are fully in accord with the *new law*, yet fail to see how we can reap the full benefit in one year. Considering the financial condition of the town we have thought best not to build new houses this year or expend very much on the old ones, thinking it would be best to unite two or more districts into one, as the necessities of the case may require, and build new when and where it will be for the best interest of our townsmen. The twelve hundred dollars raised by the town for school purposes has been divided between the different schools in proportion to the number of scholars.

We have had no lease, literary fund, or dog money the past year to help lengthen out the schools, as in former years. The coming year there will be some three hundred dollars, which will be quite an item in addition to what the town may raise. The school board have made it a point to progress slowly in making any permanent change of the districts. What has been done was more of an experiment so that our people could judge somewhat of the working of the new law.

CANDIA. — George F. Cass, Henry A. Hubbard, J. Lane Fitts.

RESULTS OF THE NEW SYSTEM.

The past school year witnessed the inauguration of a new system of procedure in regard to school matters. It is not our purpose to discuss the merits or demerits of the new law, simply to give the result of its workings· The schools on the whole have been successful, as much so as in previous years, although sickness has somewhat interfered with their prosperity. A majority of the teachers have come up to our expectations and have proved themselves fully competent to perform their duties.

We have labored under some disadvantages; for instance, a disposition on the part of some persons to criticise severely the working of the new law. Yet, with $125 less than was appropriated in 1885, our schools have averaged five weeks longer; in 1885, the schools averaged nineteen, in 1886, twenty-four weeks in length. This result was obtained by reducing the number of schools from twelve to nine, and equalizing and economizing as far as possible in regard to the wages paid. And who will say that the teachers during the past school year have been less able, less effective in matters of discipline and training, than during previous years.

Under the new law our school board have had far greater opportunities to adapt the teacher to the school than ever before; some schools requiring a more rigid system of discipline, some greater scholarship as regards the teacher than others.

Contrary to expectation, very few persons have had serious fault to find with the board or the arrangements made; consequently the duties of the office have been less onerous than they otherwise might have been.

CANTERBURY. — Luther Sargent, Olwyn W. Dow, Charles H. Ayers.

COMMON SENSE.

When the new school law went into effect last spring the school board entered upon their work with much distrust in their ability to discharge the duties incumbent upon them, and knowing full well that there were many and varied opinions in regard to the law, some claiming that its design was to unite the several schools to a large extent regardless of distance or convenience; others averring with equal force that the schools should go on as heretofore with, perhaps, a very few exceptions. After carefully looking over the ground and finding where it would cost as much, or more, to transport the scholars from one school to another, as to retain the schools as they had been, we thought it would be best to keep them in their old localities; and acted accordingly, two schools only being discontinued. When scholars lived near the boundaries of another school and wished to attend there, they were given permission to do so, and quite a number availed themselves of this privilege, and without detriment to the schools where they went. In the employment of teachers we have endeavored to avail ourselves of home talent whenever practicable, only two teachers being employed from out of town. When new teachers, or those who had never taught before, were engaged, preference was given to those who had grown up among us, and who had spent their time and money in fitting themselves for teaching, rather than to those who would use our schools as a stepping-stone to a better position.

It is to be hoped that our teachers will see the importance of thorough preparation for their work, remembering that it is of the utmost consequence that they should have a good knowledge of the principles to be taught and be able to impart that knowledge to their pupils. Our schools are every year requiring a higher grade of teachers, and we should be prepared to meet this demand. We feel that written examinations are an important feature in our school work and should be insisted upon. We find quite too many absent marks upon the registers; some on account of sickness, and many, it is to be feared, occasioned by some fancied pique or ill-will toward the teacher. Remember, parents, that if you wish our schools to be a success the teachers should have your hearty support so long as they are permitted to remain in the school.

In conclusion we would say to our friends and fellow-citizens that in this, our first year of service under the present arrangement, we have had no friends to reward nor enemies to punish, but have endeavored to do our duty according to the best of our ability, and we hereby extend to you our thanks for the support received at your hands.

CHICHESTER. — S. A. KENDALL, O. T. MAXFIELD, CHARLES LAKE.

AN EQUAL CHANCE. — FREE TEXT-BOOKS. — ABSENTEEISM.

As we come to the close of another school year it devolves upon us to render an account of our stewardship. Under the operation of our new law the labors and responsibilities of your school officers have been largely increased, and these cares have still further been augmented by the change from two terms in each school to the three which have been enjoyed by reason of the wisely liberal appropriation of last year. If any are tempted to reduce educational expenditures on the score of economy, let them remember that "there is that scattereth, and yet increaseth; and there is that withholdeth more than is meet, but it tendeth to poverty." Physical poverty is bad enough, mental poverty is far worse, and moral poverty is the worst of all. Against these three forms of poverty our schools are, or may be, our principal defence. Let us spare neither time, money, nor diligence to bring them up to the highest possible standard.

New ideas are constantly being broached, and many experiments made. Those methods which prove practical and more effective become in time universal. The free common school system of America has not yet reached perfection, either in theory or in practice.

Even its most fundamental purposes have not yet been entirely realized. For instance, it was the purpose of the founders of this system that every child should have equal advantages under it. Theoretically they do, in fact they do not. Our forefathers thought that when they had provided that schoolhouses and teachers should be furnished at the public expense, then certainly every child would have equal opportunities.

Years of experience have proved that something more is needed. Every scholar in school has two principal sources of information, the teacher and the text-book. From which of these does he learn the most? Surely both are indispensable. Then why should *one* be furnished with perfect regularity, while the *other* is left at hap-hazard? The same rule should apply to both, hence both must be provided at the public expense before it will be true "that every scholar has an equal opportunity."

The law of New Hampshire authorizes any town or city to expend money for the purchase of all necessary text-books for the scholars in its schools. This is only permissive, but as was the case in regard to town management of schools, if our citizens are not shrewd enough to see its advantages and adopt its provisions, it will probably not be long before a general law will render this matter compulsory, as it is already in several of the neighboring States. This subject is coming up for discussion at our next school meeting. Let us settle it, and settle it right. Other important propositions will come before said meeting, and we hope that all our citizens (this includes the ladies) will manifest their interest by their presence.

After due deliberation it is thought best to omit the special reports of each school, as far as relates to success of teachers, etc.

We believe that all our teachers have done faithful work in the school-room. It has also come to our knowledge that some of them have devoted much extra time to their scholars, thus showing indisputably their interest in, and fitness for, the work of teaching.

To attempt to pick flaws in the methods of our teachers by contrasting one with another might serve a good purpose when glaring faults were to be noted. But in the absence of such faults it would be a mere waste of words.

An inspection of the various registers shows that in the aggregate a vast amount of time is lost by reason of absences, amounting in some cases to nearly one half the term. Parents cannot be too careful about this matter, and trivial difficulties ought never to be deemed a sufficient reason for irregular attendance. The whole number of scholars registered this year has been one hundred and seventy-one (171), of which number all but three have been in our own schools during one or more terms.

We gladly note the fact that the desire for a better education is yearly becoming more manifest. This demand must be rightly met or its first result will be an injury. The tendency now in our country towns is to intrude the so-called higher branches into our primary or common schools to the detriment of all who especially need a thorough elementary training. In such a school the increased attention given to the higher branches must be directly at the expense of the lower. It is robbing the foundation to build the edifice higher; in short it is rank folly. Every town should have within its borders a "higher school," as centrally located as possible, where its more advanced pupils may have the individual attention of a suitable instructor.

CLAREMONT. — Edwin Vaughan, Israel D. Hall, John Bailey.

GOOD WORK WELL DONE.

At a meeting of the voters of the town, called by the selectmen, in March, 1886, it was voted to abandon the old district system and organize as a town school district.

The union district with its graded schools joined heartily in this action, and with surprising unanimity considering that it could hardly look for any special advantages to its schools.

At a subsequent meeting of the district held March 22, Edwin Vaughan, Israel D. Hall, and John Bailey were elected a school board. This board were in favor of the law, believing that a fair trial would show its wisdom and show it of substantial service to the cause of education to the whole town. They entered upon their duties with a firm purpose of giving it such trial without prejudice for or against.

The year's work has thoroughly convinced them that the action of the town was judicious. While we do not claim that the schools have all been what we hope to see them, the work has been very satisfactory with not a single failure to report; there has been a decided advance in uniformity in method in teaching and government, with a lively interest among teachers and scholars in all the schools as a united system, rather than in detached communities with their petty jealousies.

To this end the board suggested a teachers' association for the purpose of discussion and interchange of ideas, looking to more thoroughly uniform and systematic work. This suggestion was heartily indorsed by the teachers, and the association formed, which has been very generally attended, meeting once a month in term time. Our most experienced and thorough teachers have been the most constant in attendance at those meetings, and most ready to commend their value, while of course some are so far away that it is inconvenient to be always present; but the board noticed that some most distant seldom missed a meeting. These meetings have always the valuable assistance and encouragement of Mr. Hastings and the other high-school teachers. The board believed in this association, not as a normal school, but as of great value in the course indicated.

Text-books and reference books have been supplied for teachers' use to schools having none, which comprised nearly all outside of the union district, and there is still need of more helps, such as globes, maps, blackboards, etc.

We do not think it necessary to treat of each school and teacher individually. Our old teachers have been almost exclusively employed, when it could be done. Sometimes it becomes expedient to change teachers, while yet there is no palpable failure on their part or cause for censure. In such cases the board has only the good of the schools to consider, especially when such action will remove causes, or even excuses, for fault-finding and contribute to harmony.

Teachers asked to retain their schools from year to year have a right, or should have, to consider that act a certificate of our highest commendation.

We repeat from report of union district of last year: "Believing that a teacher should be specially trained for her work, we urge those who intend to teach, however great their natural aptitude, to avail themselves of the excellent facilities offered for such professional training at our State Normal School."

The board have met with but very little opposition in their efforts to carry out the law; there have been complaints; some founded on real grievances, more on personal prejudice, which refuses to be convinced, but we feel sure that if all will familiarize themselves with our schools and their work a short time will suffice to make the crooked straight. Complaints, without knowledge on the subject, carry little weight.

Five schools were discontinued.

The nearer our schools can be brought to graded systematic work the more satisfactory the results; for instance, under the old system seldom more than sixty or seventy per cent of those applying for admission to the high school were able to pass the required examination, thus narrowing the usefulness of the benefits to be derived from that school. At the last examination a class of thirty from the grammar school were examined and all passed and were admitted; we expect a larger number the coming year from that school, and quite a number more than usual from the mixed schools, thus largely extending the practical usefulness of the high school.

COLEBROOK, District No. 1. — F. F. Johnson, *Secretary of Board.*

CLASSIFICATION AND GRADING.

In accordance with the general custom at the close of the school year, the board of education of district No. 1 submit the following as their report of the progress during the past year and the present condition of the schools in said district.

The only measure adopted by the board affecting the school deserving of notice was that relating to the text-books. By the carelessness of the board, teachers, and parents in previous years, several different text-books in the same branches of study had crept into the schools, and were in general use there. There were two different text-books in arithmetic, two in algebra, and two or three in geography. The result was that one class would be working in one place in one text-book, and another class in the same rules in another text-book in each of the different departments, making two or three different classes on which each teacher must divide his or her attention instead of uniting them all in one class and giving that one class the same time and attention that had been divided among the several classes. This was carried to such an extent that nearly twice the necessary number of classes existed. This could be obviated and the desired classification effected only by the adoption of one text-book in each branch and the exclusion of all others from the school-room. After a conference with the board of education of the town schools, a series of text-books was adopted by the present board which was ratified by the town board and a uniformity of series secured throughout all the districts in the town. This, we hope, will soon be ratified by the trustees of the academy, thereby rendering unnecessary the expense of different text-books every time a pupil changes his attendance from the district school to the academy, or from the town district schools to our district school, or to the academy. The benefit of this measure to our district school must already be apparent to every one who has noticed the number of classes eliminated and the additional time that the teacher can give to the combined classes, thereby accomplishing much more effectual work.

With the mention of this measure which has tended to a consolidation of the classes, another factor must be considered, as the conditions that surround our schools and control its possibilities are peculiar and must be understood to account for its present condition. We have the basis or nucleus of a graded school and so characterize it, but it is a misnomer through the fault of no one. A graded school, properly speaking, is one in which a prescribed course of study is laid down to be rigidly followed; one in which the various branches are carried along with equal pace, so shaped as to give a certain amount of discipline and culture to the various faculties of the mind, and a certain amount to be accomplished in each at each term, all of which is directed by the common head to the accomplishment of the final purpose. This is a characteristic which our school does not possess and never can possess in the present state of affairs. The academy in our midst, in the prosperity of which we are all deeply interested, is nevertheless a constant disorganizer of the grades in our school. In the academy the compensation of the teachers depends on the tuition received from the pupils, and the studies are made largely elective to induce their attendance, and its course in no manner corresponds with the course in the district school. Consequently, when the grades in the district school are once established and the classification made to conform to a general course, and everything tends to a thorough and systematic grading, the school closes. Then the academy commences, and a third, or half, of the pupils from the district school attend, and go on in some of the studies and discontinue others entirely. At the close of the term at the academy these pupils are a full term's work ahead of the graded course at the district school in some studies and in arrears in others. When the graded school commences again the old organization cannot be continued, as new elements appear for classification. The pupils who have attended the academy are not in line with those who have not attended, and the teachers must mend the broken ranks as best they can from the materials at hand, and classify on an entirely different basis. This state of affairs is repeated term after term with the same results, and will be until arrangements are made to unite the higher department of the graded school with the academy, and one common head directs, superintends, and controls all the schools. That time may be as far distant as ever, but it must come before we can enjoy to the fullest extent the educational advantages that this village ought to afford for this and the surrounding communities.

COLUMBIA. — JONATHAN GILMAN, G. A. LUCE, J. F. LOCKE.

THE TOWN SYSTEM.

Remember that your servants have been compelled to take a position in which they have not had the hearty co-operation of all parties interested; therefore, we beg you to give our report a thoughtful, candid consideration.

One year ago, many, as some now, were not favorable to the new law, which placed the schools in the hands of three persons, instead of the old system. Now it is a fact, which you only have to make certain to your own minds by observation, that any new system, invention, or project is almost universally opposed by a large part of us when first brought to our attention. We are largely creatures of imitation, and what our fathers did we can do, and are apt to think that if they succeeded there is no reason why we should not succeed equally as well. But we should bear in mind that our circumstances are not in all points as theirs were, and, again, we should make advances, and not think it enough to simply hold our own. I know of some persons in the State of Maine who, not ten years ago, drew their hay on sleds instead of carts for the reason that their parents did so and got along tolerably well; and they often said, "What was good enough for father is good enough for me."

I am always glad to see obedience and filial respect, but bigotry is to be shunned. I do not say that every new system or plan should be received without carefully considering its merits and demerits; but this I do affirm, that we should give much thought before condemning the systems and plans in any branch of work in which we are not skilled, and even then, we should give weight to the system or plan if its author be an expert in that line of work.

Now, the new law under which our schools have been operated the past year is the system of our most practical educators, and we should give it a fair and impartial trial. I wish to ask you if you think it has had a fair trial during the past year. Let us see. We have had the usual amount of funds for school purposes; but consider this fact, that prior to this year you have been in the habit of giving wood or board, or both, in nearly every district, and this year we have not had a dollar's aid from that source, save in one district. We have been obliged to provide board and wood at a cost of about thirty per cent of all our funds. Now do not mistake my idea on this point, for I do not object to this plan of buying wood and board; I think it far better than the old plan, and a mode of more strict equality, for all help pay the expense; but this I do say, don't feel that the new law is to be blamed for this seemingly shortening of the schools; the trouble is you have pocketed thirty per cent of the money for schools by having pay for wood and board, and now, under your new system which you have adopted, you should raise thirty per cent more in your annual appropriation for schools. Still, I have compared the schools of this year with those of two years ago and find that we have had this year 161 weeks against 172 in 1884 and 1885 under the old system, showing very conclusively that with the same amount of money much more schooling can be had by the new system.

CONCORD. — William P. Ballard, J. G. Tallant, I. N. Abbott.

A CANDID VIEW OF THE SITUATION.

The town district school law has been in operation one year, and we can form some idea as to which is the better, the town system or the school district system. At the commencement of the school year the school board entered upon their duties with no little opposition to the new school law. Persons were found in almost every district claiming that the rights of the people were taken from them and vested in the hands of three persons, called the school board. If this is a correct view of the case, why trust the affairs of a town in the hands of three men called selectmen? We see nothing more arbitrary in the former case than in the latter. If it is wise and prudent for three men to manage the financial affairs of a town, then the same would appear to be true in the matter of education. Nearly all the difficulty arises in places where there are less than a half-dozen scholars. The parents think it very hard to have their children go so far to school. It is hard, we admit, but the question arises, Can we have a profitable school with but three or four scholars? We think we cannot. In order to have a good school we must have a good teacher and a reasonable number of scholars. If parents who live in places where there are but few children would consider the real object for which they send their children to school, and the advantages of a good school of thirty or more weeks over an inferior one of eighteen or twenty weeks, we think they would come to the conclusion that the advantages gained in the former case would more than balance the trouble and expense of the extra distance.

We have made but few changes in the schools, preferring to move slowly rather than too hastily. The new school law under which we are acting (although crude and incomplete) we are inclined to look upon with favor, and think that when it is thoroughly understood and carried out, will be of great benefit to our schools. We found the schools generally in good condition. The great variety of text-books, and, consequently, a great number of classes in our schools, has been a perplexing question for years. We see no practical remedy for this until the district shall decide to furnish the necessary books for all the scholars, which we hope will be at no distant day.

We have been very fortunate in securing good teachers, who have labored faithfully for the benefit of those under their charge. The closing exercises of each term have, in most cases, given evidence of good attention to studies during school hours, and we think both teacher and scholars have been deserving of the attention paid them in many cases by parents and friends, who have been pleased to spend a few hours in visiting the schools on these occasions.

The schoolhouses are, with one or two exceptions, in good condition. A little money expended in the way of repairs is necessary in order to keep them in their present state. We omit the customary "personal remarks" relating to each individual teacher and school, and close by saying that the past year has compared favorably with preceding ones, and we hope to witness greater improvement the coming year.

L. J. RUNDLETT, *City Superintendent.*

TEACHERS.

We have reached an age which demands from every individual, whatever his calling may be, the most intelligent work. The mere nominalist should not be recognized in places of responsibility. In every profession we find persons of famous reputation, a reputation very often depending upon false methods for its acquirement — true merit at a discount. The teaching profession is not exempt from this deceitful practice, I am sorry to say. The ideal teacher is the one who possesses the following qualities: A good education, tact, good health, a love for children, strict impartiality, finally, a desire to benefit the future man by instruction, and allow reputation to take care of itself. A teacher who violates the rules of propriety by ill-judged remarks, at the same time combining ignorance and deceit with her methods, is a positive hindrance to progress and an inculcator of false principles which lower the moral and intellectual standing of the community.

Education is not considered by the true teacher to be a matter of chance — an absolutely natural gift — but the systematic training of the powers nature has given the child. A man who finds a fruit tree grown up with shoots does not cut the tree or trust to nature to further its fruit-producing powers, but he observes a strict system of pruning; then, if nature has not given it the power of producing good fruit, he takes scions from the best material he can get and grafts. The tree is symbolical with the education. We must from the very outset place at his disposal the most favorable conditions for the growth and development of such powers as nature has given him. If these are insufficient, the teacher by skillful work must engraft such principles as shall have influence upon his future life as a citizen. For the proper results the selection of teachers is an all-important factor; because all work is in a very great degree dependent upon them. The most disastrous of all those causes that lead to failure in teaching is partiality — a fault that not only ostracizes the pupils from the teacher, but causes the favored pupil to become an outcast from the society of his schoolmates. It is perfectly natural, but none the less unjust, for teachers to regard dull pupils as something intolerable in a school-room; but I say that it is eminently the place for the dull, industrious pupil, and it is a teacher's duty to give him every possible chance for advancement, and not discourage him in the first term by saying there is no chance for him to advance. What teacher can foretell the occupation of a single pupil under her charge? This one may hold a position the world calls high, but it is no less important than the position of him who does the manual work by which our country lives. Their interests should be common, inasmuch as they are mutually dependent. So it is with teacher and pupil, the school-room should be a little world of itself, the interests of teacher and pupil being one.

The number of cases of corporal punishment has very perceptibly decreased during the year; some of the teachers have completely reversed their methods, others cling to a promiscuous use of the strap as the educating weapon of the nineteenth century.

It would hardly be right for me to refrain from suggesting some method by which better teachers can be procured for vacant positions. I am a firm believer in the promotion of teachers who study the art of teaching and desire to progress. I have a still firmer conviction that persons selected to fill such vacancies as are made by promotions should have had some previous training in the system they are to follow. The primary teacher, in my opinion, is the most important teacher in a system of schools, and should have a clearly defined knowledge of what to do and how to do it. The most advisable plan would be to institute a training school for teachers, thus giving a graduate from your public schools some instruction in the art of teaching before placing her in a responsible position in the primary grade. In the event of no training school, let those who are to teach certify that they have served a specified time in visiting schools and observing different methods — such a time to be regulated by the board. Such practice would result in much more actual benefit than half a dozen terms in a district school. It is not the object of a system to find schools fitted for teachers, but teachers fitted for schools, and to demand of them that they study for improvement, and not lapse into a semi-comatose state of teaching. In justice to our teachers I would sympathize with them in general in the amount of work they have to do to satisfy the demands of an exhausting percentage system. When people tell me that a pupil's knowledge can be measured by per cent I must say I disagree with them. To say a pupil is too deficient by five per cent to be promoted is to my mind absurd. The attention of the pupil ought to be attracted to the worth of study in the practical benefit he is to receive from it, rather than to the harmful practice of per cent seeking. Besides giving pupils a wrong impression in regard to the object of study, it destroys true teaching; by it teachers are made mere machines, just as cabinet-makers kept at work on one part of a piece of furniture become experts in one particular, but ignorant of the general work. If a teacher is not trustworthy enough to give an unprejudiced opinion, and is not able to judge of fitness for promotion, she is unworthy of employment. The teachers in general have worked well and faithfully, but have been deprived of the best results by worshiping the percentage system because they are obliged to.

The evil effects of the forcing system are stamped upon the faces of many children, whose health should be apparent in rosy cheeks and sprightly manners. The weary, dragged-out look of many teachers also can be laid directly to the extra amount of work this system demands. The majority of our teachers, if unhampered by per cents, would improve; for the same amount of work they have shown, applied to self-culture in teaching, would make many of them second to none.

In conclusion I would say that for thorough education no system has greater possibilities than the common-school system. I use the word possibilities because with a system where the energies of the pupil are directed to the acquisition of high per cents the greatest good can never be attained.

It is a fact peculiar to every intellectual community that it has a high grade of schools, not schools encumbered with machine-like methods, the products of which give proof of unsymmetrical development, but schools which, endowed with educational facilities and directed by master minds, furnish a training that outlives the school period of our lives and extends its fruitful results to that after-period for which our common-school education is a provision. That this age demands a more thorough education than any previous period cannot be denied. It demands not only the "passing over" of a study, but a thorough understanding of it, — not merely the cultivation of the memorizing faculties, but the cultivation of the production of original ideas, the habit of observation, and the deduction of relations from given examples.

The opportunities for education are immeasurably greater to-day than they were twenty years ago, especially in such studies as are at present required in our schools; but when we turn our attention to practical knowledge, — knowledge of something that will benefit the pupil in the world he finds on leaving school, knowledge that gives him the true value of a dollar, knowledge that develops the brain harmoniously with the other organs of the body, — then, in more respects than one, we find them deficient. I invite the efforts of the board, parent, teacher, and pupil to make the school advantages of this city second to none in the land.

CORNISH. — Chester Pike, Herbert Deming, Wm. H. Child.

TRANSPORTATION. — "NOT HOW MUCH, BUT HOW WELL."

We herewith present to the citizens of Cornish our first annual report of the condition and prospects of our schools under the new law. It was with many fears and misgivings as to the practicability of the school system that each member of the board entered upon his duties a year ago. The course to be pursued in a multitude of instances, owing to the fact of there being no established precedent, was not clearly discernible; but feeling our way slowly, and acting agreeably to our best united judgment, we have, as we trust, been in some measure successful in carrying out the provisions of the law, and at the same time promoting the interests of education.

It was no inviting task to undertake to administer a law against which the tide of opposition ran as high as it did against our present school law a year since. During the entire year it has been our fixed policy to carry out the evident intent of the law, that you might be able to judge of its merits, and at the same time to act as far as we could in harmony with the best interests of the schools. We have as far as possible in all cases avoided the execution of the radical features of the law where they seemed to be in conflict with either social or personal interests, and the result has been that only very few cases of collision have occurred.

It is a fact, however, as said by our predecessor, that "no system can be a success which does not receive the support of the people." We have differed with some of our townsmen in relation to the law. We have felt that this law was not designed to make radical changes in advance of public sentiment, and have made only such changes as we considered were for the public good. We have tried to locate the schools in divisions where the greatest number would be accommodated, and then set up equally good schools of equal length in each of these divisions, thus giving to each pupil equal school advantages as far as practicable, adopting the following list of prices for conveying scholars living more than 1½ miles from school, to and from school, viz.: 6 cents per mile for all distances over 1½ miles and less than 2 miles; 8 cents per mile for 2 miles and less than 2½ miles; 10 cents per mile for 2½ miles and less than 3 miles, and 12½ cents per mile for 3 miles and over, for each scholar conveyed to and from school, the attendance to be shown and settlement made by the teacher's register, at close of term. We have maintained 25 schools in our district the past year, taught by 16 different teachers,—15 females and 1 male. There have been 26 weeks of school, available to all the children of the town, viz.: 9

weeks of school in summer in 12 divisions; 8 weeks in fall in 4 divisions; 9 weeks in winter in 9 divisions. This is exclusive of an extended school of 3 weeks, in division 1, and of any private schools. The financial means at our disposal not being sufficient to warrant a continuance of the schools, they were, with the above exceptions, all closed on January 28. We cannot speak of these schools as compared with former years, but can safely say as a whole they have been a success. We have tried to impress upon the teachers and scholars the importance of the old motto, "not how much, but how well." Locke and Lessing both declared that the secret of learning was to learn one thing at a time, and it is the radical fault of our public school system that we overload children's minds with too great a variety of studies. Quite a large number of the teachers employed are residents of Cornish, and most of them graduates of academies, and experienced teachers, and all were qualified for their work.

DANBURY. — Jas. S. Knowlton, W. W. Walker, L. M. Jackson.

A SENSIBLE REPORT.

In presenting their report the board attempt to comply with the requirements of custom and law, apprehending that, as a result of unusual interest awakened by the inauguration of a new system, the school management has been watchfully scrutinized, and the people have little actual need to be informed concerning what has been done. Seven schools have been taught in the schoolhouses formerly belonging to the school districts, and commonly designated as the "Jackson," "Knowlton," "Ford," "Depot," "Currier," "Tannery," and "South Danbury." Three sessions were held, aggregating twenty-five weeks nearly in each school. It has been unusually difficult during the year to find and employ teachers of experience and known ability. The object has been to have a first-class school in every case, and with this single end in view the board have used their best energies. No infallibility of judgment is claimed, nor brilliancy of execution, but, considering the difficulties under which they have labored, and comparing their work, not with the standard of absolute perfection, but with the work of previous years, they believe they have no reason to be ashamed. While every term has not been of the highest order of excellence, there have been no total failures, and the general character of the work has been above the average, while the work and success in some cases might be properly described as brilliant.

The new series of "Franklin" readers has been introduced in place of the old series of the same name, and Lippincott's spellers have been substituted for Worcester's. Blaisdell's text-book on physiology entitled "Our Bodies" has been introduced. The minds of the people have been much directed toward the new law as a thing of promise or danger. Many have thought of it as an engine, necessarily productive of disturbing and injurious changes in our schools. We who have had the management of school business the past year are impressed with this lesson of our experience, viz.: That the law will do nothing, and that we and our successors must do everything that is done. The gist of the change is that "prudential committees" are fewer in number and have somewhat enlarged powers. The law neither increases nor diminishes the number nor changes the location of schools. The number of schools needed, the places where they will best accommodate the scholars, etc., are practical questions needing to be settled according to principles of common reason and justice. The new law provides that they shall be settled each year as existing conditions require, locally, by living men chosen by ourselves with a view to their fitness, instead of being settled for us by the people of a quarter or a half century ago, many of whom were in their graves before important changes in the value of property and the number of scholars in different localities had essentially changed the factors of the problem. That the best selection was not made one year ago is quite possible, but a supposition that it is impossible as a rule to select a board who will adjust our schools to the changed and changing conditions affecting them, so that our schools shall be located and supported with more impartiality and economy than under the inflexible system created many years ago, implies an estimate of the intelligence and moral principle of our people so low that we should not willingly accept it. The members of the present board performing their duties as best they could, with no favorable predisposition toward the new law, have come to believe the change made a wise one. They have found no law working ruin, but have been themselves obliged to work in the service of the people. They have found no day-dream or wild theory menacing the schools, but have found improved opportunities of settling practical questions in practical ways. They have tried to proceed carefully, and have thought it best to make few changes during the past year. It is quite likely that few will be made at any time compared with what many have expected. What is done in one year gives no certain indication of what will be done in any subsequent year, as the changes constantly going on may at any time change the character of the questions to be considered and settled. It has never been thought best in the past to increase the number of schools so that some scholars shall not be, necessarily, one and one half miles and occasionally a little more than that distance from any school. None will be required to go farther than many have gone, but some may at times be obliged to play "turn about" with others who have been less favored when a general improvement can be made thereby. This will be cheerfully done by intelligent and fair-minded people. Some who cannot rise to the consideration of a broad and just principle, and who can only contend that a school must be located within one half a mile of themselves, but who think it quite right that the children of others walk three times that distance, will probably believe there is injustice in the new law. There are certain general advantages secured by the new system over the old.

It is a proposition so evident that there is no need of an extended argument to elucidate it, or substantiate the fact that the less the number of schools to be maintained the larger the sum to each school of the amount appropriated, hence affording every scholar an additional number of school weeks, and also furnishing the means for securing teachers of experience and higher order of attainments.

Further: School privileges are more generally equalized, so that in every section of the town scholars receive nearly the same school advantages, — one grand object of the new law.

Again the constitution of the school board is such that one member only is retired each year, while the remainder continue in office for two and three years, thereby insuring the continuous results of past experience. Thus the obtaining of competent teachers is greatly facilitated, all needed improvements rendered easier, and the general administration of affairs can be conducted with greater unity of purpose and method, and more satisfactorily.

In conclusion we desire to extend our thanks to our citizens for their assistance and charity, and to express the hope that the commendable spirit which prompted the praiseworthy action of appropriating so liberally to school purposes last year may not be in the least tarnished or its merits detracted from by any act of the future.

DEERING. — ISAAC SMITH, GEORGE C. PATTEN, ALVIN TUBBS.

THE NEW LAW.

The year 1886 will mark a new epoch in the history of the common schools of New Hampshire. By the action of the Legislature at the session of 1885 the time-honored school district system, that for eighty years (established about the year 1806) had done service in the cause of popular education, was abolished and the town district system substituted in its place. Doubtless the old system had its defects and abuses, but it would be ungenerous in taking leave of it to forget that to its provisions we are indebted for the schoolhouses that dot the hills and vales throughout the State, as well as for a large share of the growth and prosperity of the schools connected therewith. It is not the time, place, nor, as we consider, within our province to discuss here the merits or demerits of the new law. To pass judgment upon it from the results of the first year's trial would be premature, if not unfair. The transition from the old to the new system has been accompanied with a burden of taxation falling heavily on tax-payers in several of the districts where the schoolhouses are old and nearly worthless, and at the same time lightly on those in the remaining districts where the schoolhouses are comparatively new and more valuable.

If a fair and equitable appraisal of each schoolhouse has been made, this seeming inequality of taxation is in appearance only, since the schoolhouses have become the property of the whole town, and the whole town one school district. The execution of this provision of the law, which is entirely foreign to the duties of the school board, has, we are gratified to say, in no way interfered with the prosperity of the schools the past year; and this fact may be considered as an apology for alluding to the subject at all.

Our first action on assuming the duties of the board was to discover how to locate the schools so as to secure the greatest advantages and facilities to the scholars at large throughout the town in attending school, at the same time leaving out the interests of no family, however insulated. This at first sight seemed a difficult and hopeless task. A closer inspection, however, showed that seven schools, which we have classified as divisions, would fulfill the above requirements.

DOVER.— Thomas B. Garland, *Chairman of Committee.*

HIGH SCHOOL.

While this committee does not wish to give undue prominence to the high school, or to exalt its claims unjustly over the schools of the lower grades, still they wish to call the attention of the public to it in a marked manner. The high school at present has about 140 scholars, and five teachers, and in the selection of these teachers the school committee has done all that was in its power to "get the best." This school is the great end to which scholars in all the other schools are tending, the prize for which they are bending all their energies, and its influence upon them is incalculable. In another point of view, it is of immense importance to this public. It is the only training school which most of our teachers ever attend, for many of them pass at once from this school to the position of teachers. The course of instruction given in our high school has been prepared with great care, and may be pronounced as good as that given in any school of the same grade. It embraces a wide range of subjects designed to meet the wants of this advanced age, and we regret to say that while a large majority of the pupils give their time and attention to their work and of course are making satisfactory progress, there are some who have not yet learned to appreciate their advantages. The high school is of incalculable importance to this community in still another respect. It is the place and the time in which permanent character is developed and established, more decidedly than during any other period of the scholar's age. The character or habits of life with which the boy or girl leaves our high school may be almost certainly regarded as those, in the main, which they will carry with them through life, and parents and guardians, as well as the public at large, cannot give too much importance to this view of the subject, and to the necessity and influence of a high school, thoroughly equipped with maps, charts, and globes, reference books, dictionaries, and cyclopedias, with chemical, physical, and physiological apparatus, and with competent and well-paid teachers.

MARKING SYSTEM.

During the past year great changes have been made in the system, heretofore practised, of ranking by daily recitation marks and by examinations in each school term. Under the present system, which we believe will be strictly adhered to, promotions will be made on certificates signed by the teachers, and such certificates will be based on the teacher's personal knowledge of the pupil's daily work and behavior, as well as on the record given to each parent by the weekly card, which they are particularly requested to notice, of the scholar's standing and of his right to promotion. If any parent or guardian is dissatisfied with any decision as to a scholar's promotion, an appeal may be made to the sub-committee of the school, for a further examination of the work of the year, and the decision made upon such examination will be final. In making the changes just indicated, and in adopting the present system, which is the well-considered work of a select committee, it is believed that we have followed in the line of the best educators of the day, and that we have conformed, much more than in the former system, to the best and latest educational ideas.

From Report of Superintendent Channing Folsom.

FREE TEXT-BOOKS.

This subject has been repeatedly laid before you during the last three years, but I think the time has now arrived to review its advantages and to urge upon the city councils the desirability and economy of the plan.

The Legislature of 1883 enacted the following:

> Chapter 46. — An act to promote the welfare of the common schools.
>
> *Be it enacted by the Senate and House of Representatives in General Court convened:*
>
> Sect. 1. Any town or any district, at any lawful meeting, may raise money by taxation or otherwise for supplying the scholars in the common schools with suitable school books free of charge.
>
> Sect. 2. Any town or any district may by vote establish suitable regulations in respect thereto; and it shall be the duty of the school committee to provide such regulations in case the town or district fails to do so.
>
> Sect. 3. This act shall take effect on and after April 1, 1884.
>
> [Approved Aug. 21, 1883.]

In my annual report of that year I presented some of the advantages likely to accrue from the adoption of the free supply thus authorized by the Legislature.

A special committee of your number having been appointed to consider the subject, a complete and exhaustive report was made in May, 1884, recommending that an appropriation be asked of the city councils to carry the scheme into effect. The recommendations of this report were unanimously adopted by the committee, but the councils were not convinced and declined to make the desired appropriation. In favor of free books may be mentioned:

1. Greater economy.

In the report referred to, your committee gave estimates of the annual cost to our children for books and supplies as follows:

First year in primary school	$0.60
Second " " "	1.50
Third " " "	1.25
Fourth " " "	2.50
First " grammar "	3.00
Second " " "	3.75
Third " " "	1.00
Fourth " " "	1.25
First " high "	6.10
Second " " "	5.80
Third " " "	6.15
Fourth " " "	6.45
Average annual cost in primary school	1.46
" " grammar "	2.25
" " high "	6.13
" " below the high school	1.85
Total cost to a pupil passing through all grades	39.35
Average per year	3.28

In 1883 Superintendent Connell of Fall River gave the following figures, showing the cost to that city of supplies for ten years:

1874 (first year)	$1.24
1875	.53
1876	.48
1877	.57
1878	.56

1879	$0.43
1880	.71
1881	.68
1882	.59
1883	.61
Average annual cost per pupil for ten years	.64

The following figures show the cost to Lewiston, Me., for the same length of time:

1872 (first year)	$2,563.50
1873	2,544.49
1874	1,989.12
1875	2,394.51
1876	2,216.11

	Average membership.	Average cost per pupil.	
1877	2375	$0.70	$1,671.67
1878	2433	.60	1,450.76
1879	2332	.85	1,991.36
1880	2280	.70	1,596.18
1881	1975	.97	1,930.35
Average annual cost per pupil for last five years			.76$\frac{2}{5}$

The population of Lewiston in 1870 was 13,600; in 1880 about 19,000.

In 1884 the furnishing of free text-books, which up to that time had been optional with the towns and cities, was made compulsory by the Legislature of Massachusetts, so that now that State has indeed free schools.

The report of the State Board speaks in high terms of the working of the system.

Under the permissive law of this State the union district of Concord took prompt action. I am in receipt of a letter dated November 26, 1886, from Superintendent Rundlett of Concord, in reply to certain inquiries, in which he gives the following information:

Concord has had the plan of free supply for three years, furnishing books, stationery, and all other necessities to 171 high-school pupils and 1,373 pupils of other grades. The cost for the first year was $1,188.20; the annual expense since, $500.

In a very recent conversation Superintendent Fisher of Weymouth, Mass., estimated the annual cost of *all* supplies, including ink, crayon, erasers, maps, charts, a generous supply of supplementary reading, reference books, etc., at $1.25 per pupil.

These figures taken from the experience of other cities show conclusively that the present method is not economical. The waste of time under the present method is understood by every one at all familiar with the difficulty in getting classes supplied with books early in the term; oftentimes days and even weeks pass before some members of a class get the required text-books. This may happen from the carelessness of the pupil or the poverty of the parent. Under a free supply work may be begun the first day of a term. It is the universal testimony of all educational observers that a removal or lightening of burdens connected with the schools has always been promptly followed by a largely increased membership. There is no doubt in my mind that the cost of books is a formidable obstacle to the entrance of many pupils into our high school, and I believe that many of our brightest children are deterred from seeking higher education than that offered in the grammar schools by this very item.

Not the least of the advantages to my mind of having the books owned by the city is the facility with which a greater variety of books could be placed before a class. You all know the tendency of children to study *words* rather than *ideas*; you know how difficult it is for a teacher to prevent mere *memoriter* recitations, and also how difficult it is to convince some teachers of the desirability of preventing them, particularly in branches of study like history and geography. With several good text-books on such studies, approved by the committee, used in the same class, the study of subjects or topics rather than of pages, paragraphs, and words would become a necessity; teachers would teach; pupils would understand and be interested in the work; our schools would be better. No one of us would attempt to thoroughly understand any subject by reading it up in the works of one author merely; ought we to expect children to do so? Ought we to train them to look upon any author as infallible merely because his book has been selected from many perhaps equally good? With these considerations before you, I trust that you will again make specific recommendations to the city councils in the matter.

Should you not, however, consider this to be wise, I would call your attention to the desirability of furnishing free all temporary or perishable supplies, as pens, stationery, blank books, and writing-books; this can be done at a comparatively small expense, and would be a great gain in time and convenience to teachers and pupils alike.

DUBLIN. — Henry C. Piper, Henry D. Learned, James Allison.

DISCIPLINE.

Whatever may have been the influences operating during the past year to mould the character of our favorite institution, the result has been reasonably progressive and satisfactory.

The increased interest of parents, as verified by their numerous visits to the school-room, 362 against 247 the previous year, has stimulated the teachers and encouraged the children; for largely in all respects and in all the ways that help to make up character, children are quite likely to go in the direction their parents go.

There has been very little resistance to wholesome rules, though, to a noticeable degree, some of the older boys have been lacking in the ornament of courteous deportment.

Discipline is a very broad term, and involves not alone the means used to foster and secure correct deportment and motive, but as well to promote the acquisition of knowledge and its conversion into wisdom.

The school vices of whispering, idleness, rudeness, and injury to property are to be suppressed and eradicated, while the virtues of punctuality, truthfulness, obedience, diligence, neatness, and thoroughness must be secured, not solely as necessary conditions of right school work, but more truly as essential elements of Christian civilization.

CLASSIFICATION.

Some teachers commit an error more or less grave by permitting an undue multiplicity of classes, some consisting of a single pupil. Such a method involves much waste of time and energy. It creates a necessity for only very brief recitations, as by the time the scholars' minds are fairly up to the work in hand they are dismissed to make room for the next class.

All the members of a class of reasonable numbers can at once receive and appreciate instruction as profitably as can one scholar, and a little friction of mind against mind, and a little emulation without envy, are proper stimulants to induce effort, and industry, and self-respect, on the part of the learner. In a class of one pupil, theoretically he stands at the head and at the foot also. Practically he is nowhere, a position not well suited to encourage a noble ambition.

SCHOOL BOOKS.

The dictionary and spelling-book appear to be falling out of the prominent place they formerly occupied, and also the faculty to use them intelligently seems in some measure to have passed away. But we forbear. Perhaps modern ideas will justify the change.

DUNBARTON.—James E. Stone, John B. Ireland, Philander M. Lord.

A YEAR UNDER THE NEW SYSTEM.

The spring of 1886 marked a new era in the history of education in New Hampshire. A vital change was wrought in the arrangement of common schools in many towns of the State, while others sought to avert the law and turn it from its true purpose, viz., to advance education, by following as nearly as possible in the ruts of former years.

Dunbarton was among the former. The change long called for by former superintendents and all friends of common-school education had come. A board of education favoring the true intent of the new law was elected. With this motto, "to advance education," your committee have acted according to their best judgment in arranging and maintaining the schools of the district.

At the outset we entered upon our trust with many doubts and misgivings as to how far we should depart from the old system, and just what changes would best serve the interest of education. Without precedent or restraint we, as a board, were left to decide how, when, and where the schools of the district should be held. This at first was thought to be a light task, but the more the question was discussed and agitated the more insurmountable it seemed.

After much deliberation it was decided to hold but six schools for the year. Two of these, however, were to be movable between two houses, in order that the sacrifice in walking might be divided, and not all fall on one set of scholars. This arrangement in one case, however, after much consultation and canvassing, was abandoned, as there were not scholars enough to warrant the moving of the school. In the other case the school was moved, but the result was very unsatisfactory to your committee, as those particular ones for whose benefit it was moved made no exertion to avail themselves of its privileges, said scholars attending less than one half the term.

A third school was to have a spring and winter term (a number of weeks equal to the number enjoyed by said school in former years), and were to be assigned to attend a fall term in another house, making a number of weeks equal to the longest school in the district. This arrangement was modified, however, according to what seemed to be the wish of a majority of those interested, by changing the winter to a fall term, and directing said school to attend another school the winter term, this giving them a chance of at least three weeks more schooling than the longest school in the district. But four, out of some twenty odd, availed themselves of the privilege, but those who did were well satisfied with the advantage thus obtained.

The remaining three schools were to continue uninterrupted through the year, having a number of weeks equal or greater than the average number of weeks enjoyed in former years. This arrangement seemed to work well till toward the close of the year, when certain ones who had always lived in favor (as regards the privileges of the common school), and were known enemies of the new law, thinking, as it would seem, that the new arrangement would pass with success, and that much better results would be secured than in former years, set themselves to work to injure the school least interfered with by the new law.

It is believed that in general a steady progress has been made, and that in all cases, save one or two, and in those only the latter part of the year, scholars have shown a marked respect for their teachers and a desire to advance in their studies. In said cases this respect for teachers and desire to grow in knowledge has been greatly impaired, and, indeed, destroyed, by the advice and encouragement of parents and those under whose care scholars have come.

Perhaps right here a few words and suggestions on management of schools will not be out of place.

In school management the teacher must maintain authority over her pupils, and should not be questioned by the pupil or the parents regarding her right to use authority, when in her judgment it is needed, in order to cultivate school virtues such as truthfulness, kindness, neatness, diligence, and obedience. Each pupil should seek to secure these virtues, for their influence in forming habits and character will be found useful in every day of their lives. Parents and teachers should not attempt to purchase obedience by a promised reward of money, sweetmeats, or other desired indulgence, to obtain submission. If they do this, who conquers? Is it the pupil or the teacher? We say it is the pupil, and he soon finds that through the channel of disobedience he can obtain any reward he may desire, and his disobedience will become more intolerable as his desires increase for greater rewards. Children left to their own ways grow up void of any regard to common courtesy, and, for the want of good sound home influence, they neglect to show proper respect to their parents and teachers, and even the stranger whom they may chance to meet in their business or walks of pleasure. The question is, how can the desired results be accomplished? There is but one way, and that only through the co-operation of parents with the teachers.

Parents should not allow trivial matters to interfere with the teacher's government of the school, and they should never condemn the government of any teacher until, by home influences over their children, they shall have done their part toward helping the teacher sustain such government.

It has been the endeavor of your committee to obtain teachers of unquestioned competency and qualifications the past year. How well they have succeeded has been left to your judgment — your judgment not, however, to be given alone from what you could learn from your children or wards, but from personal knowledge of teachers' and scholars' work gained by visiting their schools and observing for yourselves. All who have carried out this plan we believe have been well satisfied; certainly least complaint has come from those who have visited schools most. True criticism is a point to be gained in the course of education.

Much more might be said in this connection, but space will not permit, hence we will present only the few following facts and suggestions:

It will be seen that the average amount of school money raised by direct tax, plus the literary fund, from 1881 to 1885 inclusive, has been $1,074.19, while that of the present year has been $1,054.38, or $19.81 less.

Estimate the average repairs and miscellaneous expenses for 1881–85 inclusive to have been $100, and those of 1886 to have been $79, and subtract the same from the sums raised the corresponding years, approximately the same amount of money will be left to pay teachers' salaries.

Now, then, while the amount of money raised by direct tax has been greater in the past years, the amount left for teachers' salaries about the same, by reducing the number of teachers from eleven to six we have been able, first, to increase their salary from $5.10 to $6.40 per week; second, to increase the average number of weeks per school from 17.4 to 26.9 weeks; third, with a smaller number of scholars (a disadvantage) to decrease the cost per scholar from 45 to 32 cents.

This makes an average of 9.48 weeks' increase to each school, or 57 weeks' increase in school for the town district. Now reckon 57 weeks' school at the average cost per week ($6.40), it will give $364.80 worth of school above the average amount heretofore received, for a less sum of money than the average sum heretofore raised.

Still further, we have been able to increase the shortest school from 9.5 weeks to 26.9 weeks, while we have decreased the longest school only .9 of a week.

This last fact may go to show that the new law was not created for the benefit of the villager, but rather that of the outsider. The outsider is paid for his increased labor in walking by nearly triple the amount of schooling, while the villager pays for being left in his former ease by a slight decrease in amount of schooling. The outsider is *paid*, the villager *pays*.

In view of the foregoing facts it is self-evident that much good has resulted from the effect of the new law the past year.

If all parents and guardians in the future will pull together with the school board and teachers, still further advantage will be derived.

We would like to speak further in regard to the thorough and general instruction given by our teachers, the method of teaching, etc., but we pass on to the list of text-books and statistical tables.

DURHAM. — Horatio G. Chamberlin, Eben E. Berry, Penuel C. Ham.

RESULTS OF THE LAW. — DISCIPLINE.

Your board of education, in submitting its first annual report, would respectfully say that the work of the past year has been largely experimental with us all. The work we have had to do has heretofore been done by prudential and superintending committees. The expediency of the new school law was questioned and severely criticised by all and condemned by many, hence we, as members of the board of education, entered upon our task in the midst of unfavorable surroundings; but our acceptance of the trust only meant, with us, faithful and impart tial service for both parents and children. We were determined to know no favorites, but to do even justice to all as far as possible. Instead of thirteen schools as formerly, we decided to have but eight, and in the reduction we have endeavored to do no injustice to any. Of course some have had to go a greater distance than before. This we could not avoid, but we have become convinced that the increase in the number of weeks' schooling, and the better grade of schools under the new system, have by far overbalanced the inconvenience to which the most remote scholars have been subjected.

We, believing that discipline is first and instruction second, have endeavored not only to sustain our teachers in keeping good order, but have looked carefully ourselves after the schools in our respective localities. We believe in few rules, but that those should be firm and impartial, and that pupils should be taught to do things because they are right, and not because the hand of authority is over them. No school is in a true sense a successful one, in which the teacher fails to impress upon the pupils the great value of good habits of thought, of expression, of feeling, and of action. The conduct of the pupils in the school-room, on the street, and in their homes should be a living monument of the culture and refinement which is there sought to be inculcated. We wish our boys and girls to ever remember that our schools are for them, and that it is our part to see that they have discipline, culture, and knowledge. We hope there will be developed more love for our schools by pupils and patrons, and that they may be the pride of those who support them, and with this end in view we shall seek for a better classification of our schools. We think parents will sustain us in taking hold of this department of work.

We do not suggest this simply to do something new, but we feel there is an actual need of uniformity in all our schools, and we shall positively insist upon a large reduction in the number of classes in some of the schools, so that ample time may be given to each recitation, that every principle may be thoroughly taught. We ask your co-operation in the needed changes.

EPPING. — George N. Shepard, Lewis E. Fogg, Caleb F. Edgerly.

GOOD WORDS.

In presenting this report we take pleasure in saying in a general way, that the teachers employed have well earned their wages, having labored faithfully and with a good degree of success. None but practical teachers fully appreciate the difficulty of satisfying even themselves, in ungraded or imperfectly graded schools of large size.

In continuing the schools nearly as they were under the old law, we have been governed by the conviction that under present circumstances, taking the schoolhouses and their location as they are, such continuance for the time being would best meet the requirements of the new law to " subserve the interests of education and give all the scholars of the town as nearly equal advantages as may be practicable."

By the courtesy of the trustees of the Watson Academy, their commodious and well-furnished school-room was granted us for use during the year, and thereby it was made possible for us barely to provide seating room for the scholars in the central part of the town. For more to be done the people must act, and material provision must be made by vote in town or district meeting. If we are asked to provide anything like a high school for the more advanced scholars from all parts of the town, we reply for that an additional school-room near the center of the town is needed, and also an additional amount of school money. Furthermore, as there is a limit to compulsory education, there must be a willingness on the part of parents and guardians to send their children to such a school when provided.

In view of the fact that an important part of the education of youth is given in the public schools, it seems that insufficient attention is given to the relation to each other and to the schools of the different parties interested in their improvement.

In the application of a sound principle of public policy, the State, by legislative enactment, provides for a system of public instruction of youth, in order that they may become good citizens. In the exercise of parental authority fathers and mothers instruct and train their children in their duties as members of the household and social circle. In the exercise of the inherent right of "seeking and obtaining happiness," our boys and girls, with youthful aspirations, seek to promote their own individual welfare as they understand it, sometimes forgetting the lesson taught by their instructors, that their own welfare is best promoted by wholesome restraint and proper regard for the good of others.

Now these separate interests are not conflicting and antagonistic, but identical, and this consideration should lead to the earnest co-operation of all the parties interested. The school laws form no exception to the general rule that laws do not execute themselves. The success of the new law, like other laws, depends upon the action of the people, unless the law itself is defective, in which case time and a fair trial will afford the best demonstration of the fact.

EPSOM. — D. GILMAN CHESLEY, SAMUEL MARTIN, ROBERT C. BROWN.

GENERAL REMARKS TO BE PONDERED.

With much reluctance and many misgivings we accepted our office, thinking in common with many others that under the new school law a conflict of opinions respecting the management of our schools would arise, making our duties difficult to perform satisfactorily to the town. But we have found our labors much more pleasant than we anticipated, the patrons of our schools having co-operated generally with us in our efforts to have good schools. Section 6 of the new school law says: "The said school board of each town shall provide schools within the limits of said town at such places and times as in their judgment shall best subserve the interests of education, and as shall give all the scholars of the town as nearly equal advantages as may be practicable."

Under this law we deemed it expedient to unite the Marden school with the Gossville, and Epsom's part of the Dowborough school with the North Road school.

By the statute we do not understand that all of our schools must be of the same length, as scholars that attend a small school might have better advantages than those that attend a large one the same length of time, both teachers having equal abilities. Furthermore, some of our scholars that attend our larger schools have a long distance to go to school, and often find it impracticable to be present some stormy days, while it is otherwise with scholars whose homes are a comparatively short distance from our smaller schools.

Considering these facts, we have made, with the money at our command, the general length of our schools twenty weeks, plus a small fraction, by employing for our smaller schools teachers that are willing to instruct for small pay, the patrons of these schools generously furnishing the fuel used without expense to the town, and in some instances a portion or the whole of the teacher's board.

Arrangements were made with the school board of Chichester for our scholars in District No. 11 (as formerly known) to attend the Pineground school, by paying for each scholar a sum equal to the average amount expended for other scholars in Epsom.

The methods adopted by our teachers in the government and instruction of their pupils have generally commended themselves to the school board as wise and judicious. Those teachers have succeeded best in government who have united firmness with mildness. In our earlier school days the idea prevailed with many teachers that, in order to govern well, they must be armed with a ferrule, or rawhide, or heavy stick, and it was an unusual thing for a day of our winter schools to pass without some scholars receiving an application of some one of the above-mentioned instruments of torture.

Teachers were then sustained for inflicting corporal punishments for even slight offences, but it has been found that appeals to the higher attributes of youth — their manhood, reputation, self-respect, regard for the right — are often more salutary, and in the end more effectual in restraining them from wrong-doing. But suppose a teacher thinks it necessary to resort to severe measures and punishes a wrong-doer; should the parents at once take the scholar out of school? In our humble opinion the cases are rare that this should be done. On the contrary, he should be continued in school with instructions to cheerfully observe the rules of the school, fully assured that if he does this the remainder of the term will be pleasant and profitable to him.

It is a difficult matter to give satisfaction to all in some schools. To find fault is the easiest of all things. It would be well if some parents had to take the place of the teacher, that they might learn to appreciate the difficulties of his position. Do they often find it difficult to control one child? Let them remember that their teacher may have twenty or thirty children, some of whom are full of fun and mischief. Surely the teacher needs to be sustained by your sympathies, which, more than anything else, nerve the arm and cheer the heart. He should feel that he has the gratitude of parents for his efforts in behalf of their children.

Tardiness and irregular attendance are great evils in our schools, seriously impeding their progress. The school board would therefore urge upon parents the importance of having their children attend every day of the term, if possible, and to be present at the appointed hour.

Another evil is a multiplicity of different text-books of the same grade. To illustrate: There are in one school four or five mental arithmetics by as many different authors, which necessarily creates much confusion and trouble and loss of time. This evil should be remedied at an early day.

Still another evil is a mania to study the "higher branches." Besides Greenleaf's National Arithmetic and the higher algebras we find in our schools double-entry book-keeping, geometry, and philosophy. These branches occupy far too much of the teacher's attention. The common school is the place to make good readers, good spellers, good writers, and if these higher branches must be taught, let us have a public high school, as many have advocated for a long time, where they might with propriety be studied.

Our schools are doing a good work, yet far less than they are capable of accomplishing with more money and more fostering care. Instead of two terms each year having a total length of only twenty weeks, we think there should be three terms of at least eight or nine weeks each. An additional appropriation of two or three hundred dollars would give this amount of schooling. Let it be our effort to make our schools more effectual for good and a source of legitimate boasting and pride.

EXETER.—John D. Lyman, John A. Brown, George W. Weston.

THE NEW LAW.

The new law abolishing the several school districts and establishing the whole town as one district went into effect March 1, 1886. This law did not so much affect Exeter as it did many of the farming towns. The school in former district No. 6 had the last term of the year 1885–86 but four scholars; and one of the very first duties that confronted the present board was whether or not this school should be discontinued. The question was fully considered both *pro* and *con*, the opinions of many of the residents of that neighborhood were obtained, and finally, after much deliberation, the board voted to abolish it. No satisfactory arrangement could be made in regard to the pupils (now reduced to three) of this school, and Miss Mary Perkins undertook their instruction at her home. She has given them a great deal of attention, and they have made good progress, as much so as if the regular session of the school had been kept. This was doubtless the best solution for the year just past of this perplexing question. During the past winter the residents in former district No. 4, having children of suitable age to attend school, requested the board to give them increased facilities for schooling in that vicinity; accordingly the school was opened for an extra term, which will necessarily be short, as all of the schools should close the year at the same time.

ATTENDANCE.

That the average attendance the past year is less than it has been for several years is due largely to the prevalence of mumps, chicken-pox, and tonsilitis, which, together with the unusual amount of colds and unfavorable weather, have sadly interrupted the schools. Although much can be laid at the doors of the above disorders, yet for a great deal of the non-attendance one must look further, even to the homes of the children. Many of the parents, if the weather is a little doubtful, not only allow their children to stay away from school, but even encourage them in the idea; and at the same time permit them to go out of doors, and thus incur a greater danger of catching cold than if they went straight to and from school. The teachers always look out for the health of their pupils, and are both willing and insist that they sit near the stove if wet or cold. Let the parents stop humoring their children's desire to stay away from school, and only allow it in case of necessity, and we shall soon see the percentage of average attendance rapidly rising.

VENTILATION.

Too much cannot be said on this all-important subject, and the attention of the public cannot be too often drawn to it. None of our school-rooms can be said to be well ventilated. The high school, which is in by far the best condition in this particular, owes its apparent superiority to the fact that the large size of the room gives a greater number of cubic feet of air to each member of the school, so that the air need not be renewed so often.

If this school should be filled to its maximum limit, it would be in no better condition than the others. Most of the rooms formerly depended in large part for ventilation on the old-fashioned "register in the ceiling," which is about useless for the purpose for which it is intended. As the State Board of Health remark in their last report, "A register in the ceiling and opening into a closed attic is of little more account than a gimlet hole through the wall." It is true that lately some improvement has been made by placing ventilators under windows, but this is not enough. As long as so many of our school children are troubled with headaches and impaired constitutions, a better and more thorough system of ventilation should be sought. Would it not be well for the local board of health or the school board to arrange for a public lecture on schoolhouse ventilation to be given by some recognized authority on the subject.

TEACHERS' MEETINGS.

The board recommend that the teachers of the various schools meet together a few times each term for the purpose of discussing and criticising different methods of work and the details of school government. In this way the schools of the same grade can keep together in their class work, and each teacher can have the benefit of the others' experience and practice. The board would be glad to meet with the teachers at any time, and give and receive whatever suggestions may arise.

VISITORS IN SCHOOLS.

One of the best aids a teacher can have in the successful management of the school is the sympathetic co-operation of parents, and in no more effectual way can this be shown than by making frequent visits to the school. It is the duty of parents to make themselves acquainted with the working of the schools, and to establish an intimate relation with the teacher. If the children see their parents are interested in the school and make frequent visits to it, they in turn will catch the enthusiasm and become more interested themselves. They will become accustomed to the presence of visitors, and will learn not to regard the visits of the school board as days to be especially dreaded. What has been said in relation to the parents applies with equal truth to the teachers; they, too, should visit the homes of their pupils, and in this way establish a confidential relation with them which will exist not merely in the school-room. The teachers are urged to visit each others' schools, and to take all the advantages in this respect that are given them under the law.

FITZWILLIAM.—A. R. GLEASON, JONAS DAMON, HARRIET W. STEARNS.

THE TOWN SYSTEM.—THE HIGH SCHOOL.

It was with some reluctance that we presented ourselves to take the oath of office at the commencement of the present school year. Not that we had less interest in our public schools, or were prepared to do less for the advancement of education, but we felt that we should not have that almost undivided support heretofore relied upon from parents and citizens. The "new school law," doing away with school districts, was favorably received by some, we may say by the majority, perhaps, while it was strongly opposed by others. Another class said very little in opposition to the law, yet withdrew their support and encouragement from both teacher and scholar, and appeared stolidly indifferent to the vital interest of the school. We would remind our citizens that our public schools are for the best interest of the *whole* community, the same as when the old law was in force; and if any parent withholds his moral and intellectual support, he is doing a palpable injury, not only to his *own* family, but to *all* connected with his immediate school. The town of Fitzwilliam, or its board of education, can hardly be held responsible for the passage by the state Legislature of a school law distasteful to some of us, but which is so broad in its application as to enforce the submission of every city and town within her precinct. We trust our citizens will soon view this matter in its true and proper light, realizing that our schools — *good schools* — are just as essential with the *new* law as was the case when the *old* law was in force, and it is just as important that the honest, conscientious teacher be sustained and encouraged in his work.

The high school, now in session, affords an opportunity for every scholar in town of proper age to pursue the higher studies not usually found in our small, out-lying schools. We hope the town will continue this method, i. e., of having at least one term of high school each year, and we think all young and inexperienced teachers having received only a common-school education in town should find it necessary to attend at least one term at this school before being employed as a teacher in town. We cannot be too cautious in selecting our teachers. The custom of engaging a teacher on the simple recommendation of a friend to the party, in our opinion, should no longer be practised. At least two members of the board should see and converse with every applicant for a school before engaging their services, and a thorough examination should follow before a certificate of qualification is issued. Our worst mistakes have occurred by hiring a teacher on the strength of hearsay, or a letter written by the applicant.

FRANKLIN. — E. B. S. Sanborn, Frank N. Parsons.

A SCHOOL FAIR.

The school fair, which was so successful last year, exciting much interest among scholars and parents, was repeated this year. The report of the committee awarding prizes is annexed, and fully explains the character and excellence of the articles exhibited. The convenience of the new school hall for such a purpose illustrates the wisdom of the district in its completion. This fair tends to the education of those who participate in a line different from the regular course of instruction, and should be continued. It provides something, though in a slight degree, perhaps, in the way of manual instruction. Whether more should not be done in this direction, which at this time is exciting the attention and interest of all leading educators, is a matter which we leave to the consideration of the district.

Report of Judges Awarding Prizes.

The committee appointed by you to award prizes for superior exhibits at the Franklin school fair for 1887, having carefully attended to the duties assigned them, beg leave to offer the following report.

Entering upon their official duties, your committee found themselves confronted by a task for which artists and mechanical experts would find themselves none too well equipped, in order to render the immediate judgment the occasion compelled.

The general excellence of the exhibit, and the good taste which characterized its arrangement and conduct, were features recognized and commended by the visiting public. Just tributes of praise and admiration were paid to the remarkable display of talent and industry. We believe the benefits of a competitive exhibition, which so arouses and brings into active and harmonious exercise the mental and physical faculties, resulting in such a display of manual and artistic skill, cannot be overestimated.

GILFORD. — George W. Sanders, Charles H. Sleeper, Ellen E. S. Wadleigh.

A DISCUSSION OF THE NEW SYSTEM. — GRADING. — A GENEROUS GIFT.

Upon assuming the duties of this office we found on the part of many an exceedingly strong and bitter prejudice against the "new school law," and the radical changes in the school system which it designed to effect. So strong and general was this feeling we feared that any very radical changes might interfere with the success of the schools, and perhaps result disastrously to some. We also felt that the needs of the town could not be studied and comprehended in a moment, — that the wisest readjustment of the schools could not be effected without time for investigation and experiment. But the law, with its friends and enemies, has had its first trial. Many mistakes have doubtless been made which might justly have called forth censure, but with a very few exceptions all the people have apparently understood that they were mistakes, and not willful acts, and have kindly aided us in our endeavors.

We have aimed to hold the schools at such times and places as would enable the scholars in adjoining districts to attend the schools in both. This has given to many very much greater advantages. In one instance a scholar who under the old system would have been entitled to but eight weeks of school during the year has received twenty-five weeks under the new system. In quite a number of instances the ratio of increased advantages is nearly as great.

As we came to see and study the schools we felt that it would be a great benefit to the more advanced scholars if they could be gathered into a school by themselves. After canvassing the subject with scholars, parents, and citizens, we felt the present year a favorable time to try the experiment. We accordingly procured a room, and, with a small outlay for tables, blackboards, etc., opened a school of ten weeks, with Miss Rosabella M. Franklin, of Laconia, teacher. The board certainly are very much gratified with the result of the experiment, and hope the citizens will approve the same, provide a suitable room, and make the school a permanent success. We would suggest that the town hall, for which there is no present use, could, with a very small outlay, be made a very convenient room for this school.

In Register No. 6 we find the following memorandum: "This school has received a gift of a fine library of two hundred volumes from Hon. Stilson Hutchins. The books were carefully selected, and are of such a character as to prove of universal and lasting benefit to the pupils and to the people of the district. Mr. Hutchins' interest and generosity towards this school are worthy of high appreciation. A set of charts, which are very valuable in common schools, has also been purchased this term by a few members of the district." We would add that with these volumes is a very nice and ample book-case. The charts were procured through the efforts of Miss Clara A. Putnam, the teacher, who headed the list with a very respectable sum. Mr. Hutchins and Miss Putnam certainly have the thanks of the school board, as we doubt not they have of the district and of the whole town, for their noble and generous gifts.

We have carefully expended the money, and in most instances, we think, profitably.

As this report will be read in every home in town, we offer an appeal to the parents to see that their children are punctual in their attendance; but, most of all, will they each one take interest enough in our schools to visit them at least once in the year?

GILMANTON. — Geo. W. Parsons, Jesse F. Weeks, Owen J. Edgerly.

SCHOOL WORK.

Our schools have made commendable progress during the year. We have introduced Blaisdell's graded series, physiology and hygiene, with special reference to the effects of alcoholic drinks, stimulants, and narcotics upon the human system, in compliance with the laws on that subject.

It will be seen by the statistical report that some of the schools are yet small. Notwithstanding the endeavor to have them unite with other schools, there were but few who availed themselves of the opportunity.

When we realize that so many of our scholars receive all of their education, so far as school privileges go, in our common schools, we think there ought to be sufficient interest on the part of parents and guardians in the education of the children under their control to send them to school, even if it required considerable effort to do so.

We have not used money for the purpose of conveying scholars to school, but instead have held a term of school in each district united. The entire fund is then expended for the school, and nothing deducted for traveling expenses.

This year the amount of school money was four hundred dollars less than last year. Besides, the custom of giving the wood and board in many of the districts has been, with but one exception, discontinued. Yet in our management of the schools the average is twenty weeks to each school for the year, two weeks more than that of last year, and yet we are sorry to say that some have not availed themselves of this advantage.

SCHOOLHOUSES AND FURNITURE.

There are a few schoolhouses that sadly need repairing. The outer walls need clapboards and paint, and within the condition is worse, if possible,— windows and doors more or less broken, plastering falling off, and a general look of decay. The seats are the old-style board seat, with cold, frosty walls to support the back, and the desks so marked by the knife of mechanically inclined boys as to be nearly useless. Is it a wonder that such seats incline to develop round shoulders and a consumptive habit or tendency? We leave this for your consideration. More than this, teachers should have a clear theory of imparting instruction, and not go before the school to experiment, for such should remember that the material upon which they are to work is too expensive for experiments. As a rule, teachers that we have employed have succeeded well with the schools over which they have been placed. Some, however, were lacking in qualifications, as their examination papers will testify, and in making up our complement of teachers we accepted some who were not of the first grade. We propose, the coming year, to establish a standard of proficiency, and allow no certificate to those who fall below a certain per cent in examination. Justice to the children demands it.

TEACHERS.

Good schools can be kept by good teachers only, hence the utmost care should be taken by the committee in selecting, no choice being made without a thorough inquiry into their qualifications and their chances of success. We want, in our schools, teachers who are versed in the modern branches, who are workers for the common good, and striving to keep pace with the times; not those of great literary attainments, but teachers who thoroughly understand how to teach penmanship, reading, English grammar, arithmetic, geography, etc., and not those who have given their attention to the higher branches, to the neglect of the studies that are the essential elements of the common school.

REGULAR ATTENDANCE OF SCHOLARS.

We desire to call the attention of parents and guardians to the importance of sending their children regularly to school. Often scholars are out of school from one or two days to as many weeks. The interest is lost in their studies and their position in the class. We think nothing demoralizes a school more, or is more detrimental to its success. It matters not how excellent a teacher is employed, his best efforts will fail to keep any interest or enthusiasm in such a school. We hope that the subject may receive earnest thought, and that nothing but sickness will prevent the regular attendance of scholars in our public schools.

We would also urge parents to visit the school-room during the term, and not wait until the closing day, for in so doing they will be able to judge more correctly of the work done by the teacher and pupils. Those who know personally most about the school are the best judges.

In concluding our report we would bear grateful testimony to the uniform courtesy which in all instances has been extended by citizens, parents, teachers, and scholars, in all visits and examinations during the year, and we express the wish that the same cordial and intelligent co-operation may continue.

GILSUM.—JOHN S. COLLINS, OSCAR J. WILSON, GEORGE C. HUBBARD.

COURSE OF STUDY.—BOOK-KEEPING.—GOOD TEACHERS.

The work of the school board the past year has not been one of unalloyed pleasure. There was a strong feeling on the part of some in opposition to the new system, and they naturally look upon its workings at first with a critical eye, and the doings of the school board are often unjustly interpreted. We believe there are no other business matters where people use so little reason and forbearance as in school affairs. Time will undoubtedly correct this in a measure, as it relates to the new system, but in the outset it is very unpleasant. It is an old saying that a man who has no enemies lacks decision, and is of very little account in the world. We would advise any who are conscious that they lack this element in their character to seek a place on the school board, and if they do their duty they will quickly have it supplied.

We believe the time has come when a course of study should be arranged for the grammar school. Scholars differ in their inclinations, and it often takes until the second week of the term before the studies are definitely arranged. It would relieve the teacher of much annoyance.

A simple form of book-keeping should have a place in this course. It has been considered necessary only for those who expected to become accountants or merchants to study book-keeping, but every person ought to be able to record the common business transactions of life in a proper manner. For this reason a simple form of book-keeping should be taught in our public schools for the benefit of those pupils whose school days are limited. A suitable text-book can now be found in "Meservey's

Single Entry." It is simple, plain, and concise. Teachers will find no difficulty in explaining or pupils in understanding it.

Good teachers are not plenty, and it is one of the incomprehensible things that more people do not thoroughly qualify themselves for this work.

A competent teacher, trained for the work in our normal schools, will always find employment with good pay. The crowd of half-qualified applicants is a great annoyance to school officers.

One of the most foolish things in public affairs is the pinching reduction of taxes for school purposes. A writer has forcibly said, "The poorest speculation in financial affairs is to knock out the brains of a community to save money." Retrenchment can be made in many objects of public concern, but never in this. The most valuable thing in every commonwealth is the child. Every-thing finally depends on our success in making him intelligent, industrious, refined, and good.

GOFFSTOWN.—EDWIN FLANDERS, GILMAN F. FARLEY, ALVIN HADLEY.

GENERAL REMARKS.

In entering upon the duties assigned to us by the provisions of the new law, we were well aware of the disadvantages under which we were called to labor. A law which made so radical a change from that to which we had been so long accustomed, and which had been so generally approved, was very naturally viewed with various conflicting opinions in regard to its expediency. Some were most decided in their disapproval, and regarded the old system as having been good enough for them and those who preceded them, and was likely to prove as beneficial in the future as in the past. Many, and perhaps a majority, of the citizens were more conservative in their views, and, while regarding the old system with pride for its good work in the past, were willing to wait with patience to see the operation of the *new* before taking a decided stand either way; and some were very pronounced in their approval, and were ready to take advanced ground in its support. Recognizing these various views we have endeavored to do our duty as best we might and as we understood it, and leave the result of our work to your kind judgment, for your approval or otherwise, as you may determine.

We have, in the discharge of our duties, tried to remember that we were for the time the agents of the whole district, and that for the successful application of the new law we alone, whether justly or not, would be held responsible for the result. We have not intended any injustice to any one, but to the best of our ability served the best interests of all.

Our schools, we are pleased to think, have been as a whole very successful and merit praise. The teachers, as a rule, have been faithful and diligent. We think that as a class they are far better equipped for teaching than formerly. Those who have had especial training under experienced professors leave their mark in the school-room. We are among those who believe in special training for special work.

We also believe that the teachers should be supported by the parents as well as by the board in their efforts to establish and maintain a good wholesome discipline in the school-room. We know from experience that the teacher has many annoyances which are hard to bear even at the best, but, cheered and sustained by the countenance of parents and guardians, the difficulties will disappear, and the school-room present that quiet, orderly, and diligent appearance which is so desirable. The sentiment of that good old copy we used so often to have placed in our writing-books is just as sound and important to-day as ever, "Order is Heaven's first law; obey it."

GORHAM. — J. W. Greenlaw, T. N. Wight, A. S. Twitchell.

SUCCESS. — SCHOLARS. — PARENTS.

We are glad to report that this, the first year of our new system, has been successful, even beyond our most sanguine expectations, and while there have been, as was expected, many things of a troublesome nature, such as always come with radical changes, the people have, with very few exceptions, given us their hearty support, and the scholars have labored faithfully and well, under a corps of excellent teachers, and their examinations have proved that the labors and money expended for their benefit have not been in vain.

A very few scholars have caused some trouble, and have not tried to conform to the rules as they ought; but we have thus far refrained from taking the extreme measures which the law provides, hoping that by patience and pleading we might make them see their error and become studious and obedient. The interest of the schools, however, and especially of those who are trying to make improvement, demands from us a more rigid enforcement of the rules, and from the parents of those who are not inclined to obey, a hearty co-operation with us, to the end that the coming year may be fraught with still greater success.

Quite a number of the parents, especially the mothers, have attended the examinations, and more than usual interest has been manifested since the grading, which, we are happy to say, though not yet thoroughly done, for want of time and by reason of the broken condition caused by the sickness of the summer and fall, is in a good condition, better than we expected, and improving every term. Our school year, as now arranged, closes with the spring term, when the results can be more fully observed, and we earnestly urge upon the parents, both father and mother, to visit the schools, attend the examinations and thus encourage the work so successfully begun.

We keenly sense our position and the many unpleasant duties incumbent upon us in grading the schools, which now is done upon merit only, and while we happily advance those who pass their tests, we are sorry for those who fail.

We have tried in all our work to do our whole duty, and shall so continue with the one purpose of doing what is right, and making the system a success in our town, hoping that both parent and scholar will understand that we have only their best interests in view, both present and future.

We earnestly urge, also, that parents see to it that their children attend regularly, as every day lost puts them behind their classes, and makes it harder for them to keep up in their studies, and pass their examinations; they should also be sure they have what books are necessary, and that nothing is wanting to help them on in their efforts to secure an education, which is so necessary to fit them for useful and influential lives. Attention is also called to the cards which are sent out weekly showing the rank, as parents will know by these just how their children stand, and can help them to improve, when it is necessary, to maintain their position.

GROTON. — Daniel Kidder, George E. Colburn, Dimond G. Wells.

ABSENTEEISM.

Irregularity of attendance is a great and, we fear, an increasing evil. But hark! do I hear voices around me whispering "that theme has been harped upon every year"? But since irregular attendance is such an evil, not alone an injury to the absent scholars, but to the entire school, and especially to the classes to which the absentees belong, retarding the free advancement of those classes, there *is* and *will continue* to be reason for bringing this subject before you, hoping by continued importunity the growing tendency of the evil may be checked and soon be entirely eradicated.

We readily admit that there are some reasonable causes for irregular attendance of scholars, such as sickness of scholars or in the family, unforeseen occurrences not for the time within the control of the parent or guardian, or even of the scholars themselves. And since the remedy to correct this tendency to irregular attendance lies largely with the parents, we appeal to you, parents, as you desire the intellectual improvement and the future well-being of your boy or girl (and what parent does not desire this?), to make every and all reasonable effort by some systematic arrangement, to secure to that boy or girl, as nearly as possible, the entire benefit of our short terms of school.

The registers show that only nine of the one hundred and fourteen scholars attending the several schools in town have not been absent for a single school session, while twenty-nine have been absent more than one half the sessions of their respective schools.

The average attendance of the one hundred and fourteen has been only eighty-three, or a loss of twenty-seven per cent of the whole number of scholars.

Some have attended quite regularly for a few days, perhaps a few weeks, and then from lack of interest in their books, or becoming restive under proper restraint necessarily imposed upon them by their teacher, have become more and more irregular in attendance, with waning interest in their studies as the term advanced, or have absented themselves from the school entirely, as the registers show to have been the case with some during the year, and by these courses have lost a large portion of the benefit which surely would have accrued to them by regular attendance and close application to study. Both these classes (i. e., those who attend with indifference and those who drop out of the school entirely) we anticipate will be among that number who in life's busy scenes will display an ignorance of which they will be heartily ashamed, and, as an excuse for this sad lack in education and general intelligence, will outrage the "King's English" by declaring "I didn't have no chance for schooling when I was young"; thus adding falsity to their youthful indifference to their own mental improvement. To such scholars we would say that such remark will have little weight with those who may chance to know with what indifference you have regarded the inestimable school privileges which have been so much expense to the tax-payers of the town, and which were yours to enjoy while you attended so irregularly, or entirely absented yourselves from the benefits of your school. Even as you go out into the busy scenes of life among strangers such a remark will be received with distrust and with many grains of allowance, since intelligent people who know the advantages our public schools afford the youth of every community, will trace your unnecessary ignorance to its true source, namely, to your criminal indifference to the educational advantages offered you by our free school system. We now appeal to you, boys and girls of our schools, whom we have delineated, and to such as may be inclining to follow the path you have marked out, to change, and that at once, this indifference to study and to the characters you are forming during this golden period of youth, and start upon a new career in life,—upon a course of study and intellectual improvement in school and out of school, and upon the formation of such character as will make you intelligent and respectable men and women, known as such, honored as such, wherever in the world's great strife you may chance to be and bear your part.

HAMPTON FALLS. — Horace A. Godfrey, John J. Brown, Edmund Pearson.

REGULAR ATTENDANCE.

Parents and friends may rest assured that the teacher has labored faithfully and well for what she has considered the end in view, namely, a thorough understanding of the studies that she has taught. We would urge upon the friends of this, as well as of the other schools, to visit them more frequently and see for themselves the work that is being done, and if little things are not to their ideas, they would at least learn the teacher's reasons for the course she is pursuing. The people should recollect that the next generation is being educated in the schools of to-day, that in proportion as the schools do their work thoroughly depends the success of the next generation, and in a manner the prosperity of this and every other town in the State. They are also reminded that regular attendance is necessary to success. The irregularity with which some of the pupils attend school is greatly to be deplored. It is a well-known and generally accepted fact, that a poor teacher, well supported by parents and friends, can produce better results than a good teacher that is unsupported can. Therefore, we would urge upon all parents and friends of education the importance, during the coming school year, of securing regular attendance and giving the teachers, whoever they may be, a cordial and undivided support.

HEBRON. — E. K. FOLLANSBEE, CELIA A. JEWELL, HIRAM M. WORTHLEY.

WISE WORDS.

It is natural and right that parents should feel a lively interest in the welfare of their children. To guard well their present for future benefit is a worthy motive. Perfectly proper is every reasonable effort to accumulate a competency for old age, and a patrimony for the rising generation; but a legacy more lasting in its effects than the ancestral acres or a bulky bank account, is to give to your children, every one of them, a good education; and the parent who sends his son into the world uneducated defrauds the community of a good citizen, for knowledge carries an influence over the minds of others, and always governs ignorance, hence "Knowledge is power."

When we consider that our common schools provide elementary instruction for our school population, and all the formal education a large share ever receive, we regret the scantiness of school funds. Our number of school weeks compare unfavorably with surrounding towns. Our scholars are of the right age to profitably receive instruction, and some are sent out of town to school that would remain at home with presumably as beneficial results were home privileges offered. We recommend the matter of school finance to your consideration.

The village schoolhouse has been kept in repair in the past, and is the only one in town fit for school purposes in cold weather. The McClure schoolhouse is unfit for occupancy any season. A good schoolhouse, well located, well ventilated, with a well-arranged heating apparatus, that contributes to the health and comfort of the scholars, in short, one that will be a point of local pride, will greatly increase educational interest, and have a pleasant effect upon the stranger who often forms an opinion of the moral standing of a locality by the condition of its schoolhouses.

We would urge parents to visit the school-room during the term and be able to judge more correctly of the work accomplished by teacher and scholars. Those who know personally most about the schools are the most competent judges. It establishes a friendly relation with all connected, and secures the greatest amount of good to the greatest number.

HENNIKER.—John Gutterson, Hiram Marsh, George C. Preston.

In presenting the first report under the new law, your committee have seen fit to depart from the usual custom of descriptive district reports, partly because there is no indication that the law requires them, and also for the reason that unless they are extended beyond their ordinary limits they are practically worthless.

We think we shall not be accused of undue egotism when we tell the same old story, that " the success of our schools has been fully up to the standard of the past few years." Indeed, considering the well-known antipathy of our people to the " town system " at the beginning of the school year, it is remarkable that so little friction has resulted in the working of the new order of things.

We have aimed, as far as practicable, to give all our pupils equal privileges, but in country towns like Henniker this can be only approximately accomplished.

GRADING.

It was thought advisable, at the beginning of the fall term, to establish a primary school, composed of the younger pupils in districts Nos. 8 and 11, in the brick house, north side, and an intermediate school on the common, with the more advanced pupils in both districts.

The results accomplished during the fall and winter terms have, to the unprejudiced, at least, proved the success of the experiment. It is hoped that the near future may see a thoroughly graded school in the village, with a free high school, which all pupils within the limits of the town, having the requisite attainments, may attend.

TEACHERS.

Of the seventeen teachers employed the past year only four were without previous experience; while all have been in some degree successful, there has been a wide range in the capability shown and in the results accomplished. The old adage, that "Practice makes perfect," is nowhere more fully exemplified than in the school-room, yet most of our young teachers have done excellent work, and, with experience, will not fail of becoming successful.

REGISTERS.

We have been carefully over every page of the several registers to correct any mistakes which might have occurred, that our statistical report to the State Superintendent might be as correct as possible. In some cases we have found very little to do, while in others it has been quite a task. We hope all teachers in the future will consider this an essential part of their duties, and make their registers full and correct.

ATTENDANCE.

It is of the utmost importance to parents and others having charge of our scholars, that they carefully consider the percentage of attendance in the statistical table annexed. It is found to be the largest in No. 7, .9777, and the smallest in No. 4, .8571. In the latter district almost fifteen per cent of the school year is far worse than wasted, from the fact that the absence of one or more scholars is not only a dead loss of time to them, but also a heavy damage to the remainder of all classes to which the delinquent pupil belongs. When parents realize this fact, and consider that they are not only doing their own children an injury, but at the same time are guilty of greater injustice to their neighbors' scholars, they should consider themselves under obligations of such importance as to cause earnest effort in the future to correct this great abuse.

In a few districts it has been the practice for several years to allow a portion of the pupils to leave school two or three days before the closing examination. Such a course serves to release those pupils from all sense of responsibility, and is, besides, discouraging, if not insulting, to the teacher.

HILLSBOROUGH. — EDGAR HAZEN, ALDEN P. FARRAR, FRANK J. BICKFORD.

MORE MONEY NEEDED.

We employed what teachers we could in town, and we believe that our schools have made as good progress in their studies as has been made in previous years. If the terms could have been longer, the results would have been better.

If the district would raise some few hundred dollars in addition to what the law requires, we believe it would be a good investment for the rising generation. Some of the schoolhouses are in a very dilapidated condition, utterly unfit to be occupied by teacher and scholars, and we believe such houses should be repaired or the schools discontinued. As we have remarked, we believe the general condition of our schools is good, and will compare favorably with those of former years; still there is chance for improvement. The highest praise or harsh criticism would alike be inappropriate and unjust. There are instances of partial failure, but can we reasonably expect at eighteen dollars per month perfection in teachers, more than in those pursuing other vocations? Our motto should be to get as near perfection as we can, then make the most of what we do get. Our common-school system, since its first introduction, has no doubt been greatly improved; but the question may arise, Have we kept pace with the improvement, or, as new methods and means for gaining knowledge have been invented and applied, have not individual effort and ambition in a proportionate ratio abated on the part of learners? Other causes which have prevented the best results in our schools remain the same, and have the same injurious effect. Among these might be mentioned indifference at home, unjust criticism of teachers, and a diverted attention of scholars.

HOPKINTON. — Henry D. Dustin, T. B. Richardson, J. S. Straw.

CANDID STATEMENT AND SENSIBLE CONCLUSIONS.

It will be generally acknowledged that the present school board commenced their work under somewhat embarrassing circumstances. A law had just come into force placing the entire management of the schools and the school funds under their control. This law, as a general thing, was not popular with a majority of the people and was bitterly opposed by many, who considered the sweeping changes made as usurping the rights of the many and putting the power in the hands of the few. Therefore the board thought it advisable to act in all cases with prudence and caution, recognizing that standard principle, that the will of the majority is the highest law. Our first labor was to ascertain where the scholars of the town were principally located, and where it would be necessary to establish schools for their best accommodation, so that none should be wronged by the new state of affairs. To do this much of the town was canvassed, and the parents of the children consulted in regard to their schools. Although we found much opposition to the new law, nearly all were reasonable in their demands and willing to submit to our judgment, to do what we thought right and proper under the law. This of itself was no easy task. The new law, thus far, has not changed the position of our schoolhouses, and we found it difficult to give all equal accommodations. After several consultations it was decided to establish for the present thirteen schools with the addition of a small private family school near Farrington's Corner. These were so arranged that but very few scholars had more than one mile to travel to reach their school.

This arrangement has dispensed with six schools in town and still none have been crowded, thus giving the scholars about one third more schooling than usual from the same appropriations. Nearly all the scholars have had a chance for twenty-six weeks' schooling by the arrangement of the past year. With our schoolhouses properly located and a little exertion on the part of those who reside on the extreme outskirts of the town, we see no reason why each pupil may not be entitled to about thirty weeks' schooling on the same appropriations that have usually been made.

As many have thought the present law may soon be, in some respects, changed, we have done as little in regard to changes and repairs of schoolhouses as possible, making only such repairs as the exigencies of the case demanded for immediate use; but some repairs are essentially necessary before the next term of the schools, and appropriations for the same should be made. The house on Beech Hill is entirely unfit for use, and others need some repairs; but we counsel prudence in all expenses until the permanent location of the schoolhouses, as it is certain that some will have to be relocated for the accommodation of the public. It has been generally conceded that the school appropriations in our State have not been properly expended.

To be sure, towns have had the power to remedy these faults, but wherever it was attempted contentions would spring up, and there would be so much prejudice against the breaking up of the old district boundaries that it usually resulted in neighborhood quarrels and a failure in the accomplishment of the desired result. Therefore under legislative enactment we are attempting to do what nearly every town should have done years ago.

The new school law is doubtless faulty and defective in many respects, but in regard to it we would advise,—"Prove all things and hold fast to that which is good."

In conclusion we will say that we believe our labors for schools the past year have been crowned with *some* success; and, as a whole, our schools have been ordinarily prosperous. To provide for the want of all the schools has been quite a task, and, of course, could not be done to the satisfaction of all interested. We plead guilty to some mistakes. More money should have been appropriated for the fall and less for the winter terms in the back districts. This mistake was made by not taking into consideration nearly two hundred dollars of literary fund, which was afterwards returned to us, and which gave us more winter schooling than we had expected.

We hope that both ourselves and others may profit by the mistakes of the past.

HUDSON.—DAVID O. SMITH, DANIEL GAGE, KIMBALL WEBSTER.

We do not presume to write a school report that will meet the approval of every person. Some prefer one of considerable length, circumstantial and didactic in character; others are of the opinion it should be quite short, merely giving statistical and such other information as will meet the requirements of the law; and still others, who seem to believe that a report is of no consequence and might be consistently ignored. It was doubtless the intention of the General Court, when the system of printed school reports was inaugurated and made obligatory, that they should be made as instructive, suggestive, and helpful as practicable and thereby be instruments or agencies calculated to awaken the attention of the citizens of each town and direct and stimulate thought upon some of the various phases and essential wants of their respective schools. As, under the present system, we have but one district, and all citizens of both sexes are invited and expected to be present and vote at the annual meeting, it would seem that such information might be more easily and satisfactorily communicated in an oral manner than in a printed report. Should not every voter, especially every tax-payer, and more particularly every father and mother, be willing to spend one day in the year in consultation or conference, dispassionately receiving and imparting well-digested thoughts upon some theme connected with the welfare of our schools and their own children? Fellow-citizens, you have acted wisely and liberally in the past in granting appropriations for the support of our schools, and you deserve and have received from various sources many warm commendations. We trust this feeling will continue to be cherished, coupled with a hearty co-operation and a firm determination to make effectual every available instrumentality which will develop and secure those results which were anticipated by our fathers when they planted and reared the system of free schools, which has been so long the pride and joy of New England. To accomplish this, the teachers and committee must perform their duties with fidelity; but it must not be forgotten that the weight of responsibility rests upon the citizens, individually and collectively. There can be no better place, no time more opportune, no means more effectual to get our hearts and minds harmoniously attuned to our several responsible duties than a well-conducted, good-natured, lively conference meeting at our annual district election. Committees, teachers, and scholars need the reflex stimulus which such a gathering is capable of begetting. Believing that there will be a hearty response to the above suggestions and invitation and that, therefore, if thought desirable, the committee will have an opportunity to present some ideas which will be of practical use, we respectfully submit the following brief report of the general work and progress of our schools.

Comparing the present status of our schools with the past, we can plainly discern advancement and many very encouraging indications for the future. Yet our standard is quite too low, our zeal too cold, our efforts too feeble, our sense of individual responsibility too languid, our estimation of the worth of physical, moral and intellectual culture too dormant and groveling. It is within our power to raise our schools to a point of excellence and perfectness that shall be pleasurable to us as individuals, and an honor to the town and State. Teachers, parents, children, shall this be done?

More effort should be made to educate the children in the schools in a thorough knowledge of American history and institutions. Young men and young ladies should be encouraged to investigate these matters for themselves and should be led to place a right estimate upon citizenship. Among these lines lies the work which chiefly needs to be done, and upon the effectiveness and thoroughness with which it is accomplished will depend to a very considerable degree the fidelity and intelligence with which the citizens, male and female, of the coming generations will cope with the formidable problems which will be presented for solution.

Next to a hope of heaven in importance is good robust health. An inspired writer, in corresponding with his friend says: "I wish above all things that thou mayest be in health and prosper as thy soul prospereth."

Standing between the parents, the committee, and the children, renders the position of the teacher extremely hard to fill with satisfaction to all concerned. Hence, sympathy rather than harsh criticism should ever be extended to the faithful teacher.

But few of our schoolhouses are properly ventilated, and our children and teachers are daily inhaling an impure and poisonous atmosphere, the teacher especially, as she is above the heads of the children. Is it strange that they have colds, coughs, hoarseness, weak and susceptible throats, headaches, and that long catalogue of nervous derangements which render school work a drudgery and school life a burden?

Stagnant air is as dangerous as stagnant water! Fellow-citizens, the proper ventilation and structure of our schoolhouses demand our serious attention and *action forthwith.* If parents and teachers would use as much discrimination and wisdom in the nurture and training of a child as they would in raising and training a colt, we should have better results.

JAFFREY.—WM. W. LIVINGSTON, D. C. CHAMBERLAIN, MARSHALL C. ADAMS.

UNION OF DISTRICTS.—TRUANCY.

It has seemed very desirable to the school board that the teachers of the different schools should meet together from time to time and discuss matters having reference to the best methods of teaching. In this way it is thought our teachers will come into fuller sympathy with each other. The younger and less experienced, especially, get assistance which will tend to bring our schools to a common level and make them what they ought to be,—helps to the Conant High School, while at the same time they will be benefited by that school. For various reasons only one such meeting was held during the year. It is to be hoped that in the future it may be found practicable to have these meetings as often as once each term. The school board, in the discharge of their duties, have tried to keep several things distinctly in view,—first, that the interests of all the scholars in town were committed to them; second, that some things must be learned by trial, and so they should make no more changes in the schools than the present circumstances imperatively demanded, and that they should acquaint themselves so thoroughly with the wants of the different parts of the town as to know beyond reasonable doubt if the changes made were for the best, if others were required, and if so what they were. Such a course, it was felt, would give those who should have charge of the schools next year a basis to start from that would enable them to go on without undoing any of the work of the present year; accordingly schools Nos. 6, 11, and 13 were discontinued. An effort was made to unite No. 12 with Marlborough and Troy. This failing it was given over to Troy for the summer, Jaffrey paying one third of the expense. The school was closed for the rest of the year, but provision was made for the scholars elsewhere. It seems that in some way a school ought to be supported at this point by the adjoining towns.

Although a truant officer was appointed who looked up many delinquents, yet it is plain that not all have been in school who ought to have been there by the requirements of the law and for their own good. From an economical or moral point of view neither town nor parents can afford to let children grow up in ignorance, even if they remain from school to work. With our present arrangement of schools a little foresight on the part of parents and others will enable them to comply with the demands of the school law, and not have all their children in school at the same time. Experience, however, makes it sufficiently evident that there is a class of children who will go to school only as they are compelled. A judicious exercise of the law in such cases is demanded for the good of all concerned.

Experience, too, shows that with one or two exceptions outside of the villages it is not practicable to run the schools far into the winter unless it be in special cases for the older scholars unable to attend in the summer and fall. With care in the adjustment of terms the instances will be rare when the proper amount of school may not be secured in the parts of the town where the roads are the worst before the deep snows come.

It must be evident to those who have given attention to our schools during the year that the scholars as a whole have had better facilities for education than in the past. One of the board, who has acted as superintendent of schools since 1879 with the exception of a single year, is happy to say that in his opinion he has never seen the schools as effective for a given time as they have been for the school year now closing. By generous sympathy and co-operation on the part of all concerned there is every reason to think that during the coming year our schools may increase in efficiency as much as they have in the past year.

KEENE.—JOSEPH B. ABBOTT, *for Board of Education.*

PAROCHIAL SCHOOL.—SUPERINTENDENT.—EVENING SCHOOL.

Since our last report the parochial school, on Main street, has been organized, with the result of drawing away from Union district so large a number of scholars that it has been found necessary to discontinue three schools. This obviates the necessity of hiring the rooms on Marlborough and Church streets, which were rented last year, and it is expected that the new schoolhouse on Elliot street will accommodate a sufficient number so that the rooms on Center street, now rented by the district, may be dispensed with.

The net loss of scholars to the schools in Union district is 317. The withdrawal of so many scholars for a time disturbed the schools to some extent, and entailed some labor and care to redistribute the scholars among the different schools, but the district has now nearly or quite adjusted itself to the new order of things.

The schools have been taught with the usual success the past year. Nearly all the teachers are experienced, and have been in the employ of the district for a number of years, and can be depended on to do good, thorough work. The board have made arrangements, at a very slight expense, to have the rudiments of music taught in all the grades by a system of charts, which can be used by the teachers, and does not require the services of a music-teacher.

At the risk of wearying the district by our importunity we would again suggest the propriety and perhaps necessity of employing a competent superintendent. So long as we continue without one we are not keeping pace with other cities, and are losing much of the value of our money expended for schools. We lack that uniformity of method and that intelligent supervision of our teachers' work which is essential in a system of graded schools. We sincerely hope that the wants of the district in this respect will be filled immediately.

The statistics of the evening school are as follows: The pupils were, males, 21; females, 2; three were 14 years of age, one of 15, three of 16, one of 17, four of 18, two of

19, two of 20, one of 22, one of 26, one of 27, one of 29, and one of 31. Of the two females — cousins — one was 19, the other 21. The term, nominally of fourteen weeks, was actually of thirteen weeks, five sessions in every week, each of two hours; but three evenings no session was held because of the teachers' institute, and two evenings were lost on account of Christmas Eve and New Year's Eve.

The record of attendance and absence is quite diversified. One person was present only the last two weeks, one the second to the sixth inclusive, one the last week, one the first two weeks, one the last three, one the last half of the term, two all but the first week, and two were present ten weeks. One person was present at every session with no loss of time, four others the same time with but two absences, another the whole session with but ten absences, another thirteen weeks with but three absences, another twelve weeks with but one absence, another thirteen weeks and fourteen absences, another seven weeks and two absences. The two young women attended eight weeks, one at every session, the other with one absence. The average attendance was about thirteen, the average membership fourteen.

The studies were reading, spelling, arithmetic, and book-keeping. During the last part of the term the reading-class, numbering twelve, took up an elementary American history, used in the grammar schools. While this proved no harder than the ordinary reading-books, it was much more interesting to the school. Arithmetic, with blackboard exercises, was studied by all the school. Spelling was conducted by writing the words, thus giving incidentally an exercise in penmanship, and was practised by all the school. One pupil, more advanced than the rest, made some progress in book-keeping. Few visited the school save the members of the board and some of our teachers, the age and position of the pupils rendering frequent visits of the citizens undesirable.

The evening school was exceptionally fortunate in several things,—first, in securing the services of Mr. Mallory, principal of the high school, who brought to the work not only very high qualifications as a teacher, but also years of experience and strong personal interest in the most zealous scholars; second, the age of the pupils and the steady attendance of many of them, which had the most favorable influence; and, lastly, the complete absence of the idle and noisy element. Several of the scholars regretted the close of the school, and said they wished it might keep much longer. Very good progress was made by the pupils.

KINGSTON.—Charles B. Towle, T. O. Reynolds, Jesse P. Marshall.

THE NEW LAW.—THE SCHOOL TAX.

At an early date after election the school board met, and organized as follows: Chairman, Charles Burr Towle; secretary, T. O. Reynolds; treasurer, Jesse P. Marshall. Believing thoroughly in the wisdom of the new law, your committee have endeavored to administer it practically and to the letter. The work of the board during the first year subsequent to a change of system could not be otherwise than perplexing, and to a certain extent experimental. It requires time and practice to adjust the mechanism and to set it to running smoothly on the new track. While your schools have been better supervised — nearly forty official visits have been made — and more systematically conducted during the past year than was possible under the old law, your committee feel warranted in the belief that the coming year and years will be measured by a still more marked advancement of educational interests.

The present locations of the schoolhouses are admirable, and no schools have been abandoned during the year, nor is it probable that any will be discontinued in the near future. It was deemed expedient that those teachers who had demonstrated their capability by previous service should be retained if practicable, and measures were at once concerted to secure their re-engagement. Four of the five teachers were secured, and have served throughout the year. The fifth school has been less fortunate, and a more frequent change of teachers has been necessitated by circumstances than has been either desirable or consonant with the best interests of the school.

It will not be possible to secure first-class teachers during the coming year for the salaries which have been paid the past season. No teacher has been paid more than thirty dollars per month, and even at this figure the schools have been too short. The minimum length of school in the smallest districts ought to be at least twenty-eight weeks. Even if it were sound policy to employ other than the best teachers, nothing near this length is possible with the usual appropriation. Inquiries directed to four adjoining towns bring the information that in every one of them are common schools, where the price paid to teachers exceeds from two to ten dollars per month the highest salary paid in Kingston, and in only one of these towns is the population or invoiced valuation of the property in excess of that in this town. Under these circumstances the best teachers cannot be retained here. Like the clergymen, they will usually and very properly go where they have the loudest call. The school board earnestly wish to render your schools more efficient, but all effort in this direction must prove abortive until more funds are available for school purposes. Little progress in this respect has been made for many years. Reference to the selectmen's report, submitted March 1, 1860, shows that during the previous year six hundred and eighty-six dollars school money was raised by tax. This is only thirty-eight dollars less than the sum raised last year. In 1859 the average length of all the schools in town was twenty-seven weeks. Last year it was but twenty-five weeks. This is not progress, it is retrogression, and it is humiliating to think that in the Granite State a town should be found where its citizens are actually doing less for the education of their sons and daughters than the fathers of these citizens did for them twenty-eight years ago. In justice to the children the tax for school purposes ought to be at least one thousand dollars, and your committee would recommend nothing less.

LEE. — Fred P. Comings, Hosea B. Snell.

NEW LAW. — EXPERIENCED TEACHERS. — ABSENTEEISM.

School matters during the past year have been in a state of chaos. New laws have been put in force, and what is known as the town system of schools adopted, instead of the old district system. The old district system was faulty, and it has been done away with, and it is now our duty to find the faults in this system, and, having found them, to do our utmost to correct them, and not condemn the whole system because in some particular case it works an injustice, whereas the old system did injustice in hundreds of cases. The new schoolhouses which we were led to expect for use this year have not yet been completed, although one is now being constructed, and we have no doubt will be ready for use during the next term.

We have met with good success generally in our efforts to secure good teachers for the schools. We believe it to be for the interest of the school to keep the teacher that is doing good work, and we were therefore sorry to lose two teachers after the first term of school, and after the second term to change all but one teacher. This makes a confusion in the school and hinders rapid progress, but was unavoidable. What business venture could succeed if a new man was put at the head of it every few months? We wish to run our schools on business principles, and think that where the teacher is known he should be engaged for the year, to prevent this frequent changing of teachers.

There has been no serious trouble in any of our schools during the year. The winter term at the Lane school was terminated by the teacher two weeks before the time. Trouble of this kind seldom occurs in a school if parents do not encourage their children in bringing home tales about the teacher, and if they give them plainly to understand that they are to obey the rules of the school.

We are sorry to see so many absent and tardy marks on some of the registers. It seems to be a disadvantage to the scholar to live too near the school. Indeed, the record of attendance is much better for those living a mile or more from the schoolhouse than it is for those living nearer than that. We were told by one teacher that two of her scholars, Ada Ellison and Henry Cofran, living a long distance from the schoolhouse, were not only always in attendance, but made more marked progress than any other scholars in that school. That which is so easily gained is not valued as it ought to be.

Some effort has been made in one of the schools to class it and fix a course of study, and we hope to see the work go on, not only in that school, but in the others.

Some scholars have been placed at a disadvantage by being sent to school with books different from those belonging in town. It is a great disadvantage to the scholar and to the school for the teacher to be obliged to hear so many unnecessary classes. Some of the books that are sent to school with the children, our grandfathers studied, and the books have long since passed out of date.

LEMPSTER. — Abram Bean, L. A. Purmort, H. L. Thompson.

SENSIBLE ADVICE.

To teach, interest, and discipline a school requires a teacher who is alive in the work, — who has love for the business, rather than a pecuniary object. Many of our teachers fail through the want of influence over their scholars. A teacher may pass smoothly through the term and please most of the scholars and yet accomplish nothing except amusement during the whole length of the term. A school may continue and live under such instruction, but will not become what it might be with a more efficient and earnest teacher, who has the ability and will to do the work, though all the elements oppose. There are teachers who will succeed in any school. Those are the ones to employ. If they demand a large compensation, pay it, for we believe a good short school is better than a miserable long one.

The health and comfort of our children ought to be sufficient reason for keeping our schoolhouses in repair.

There is need of more uniformity in text-books. Also maps, charts, blackboards, globes, etc., are very much needed.

As we shall have to wait till "the moving of the waters" before we have what is needed, the great question remaining for us to solve is this: Taking things as they are — our schoolhouses, text-books, teachers, limited school money, and pupils as we find them, — how can we secure the best results with what we have to do? What is the most we can do for our children in the few months in each year they attend the district school?

Grievous complaints are often made in relation to the government of schools by many persons who never darken the doors of the school-room, and consequently know nothing of their perplexities. To such we say, Visit the school-room; surprise by your presence your children; learn by observation the trials of a teacher; extend the right hand of friendship; cheer and support by your counsels, rather than discourage by your fault-finding.

LISBON. — S. P. Ford, J. S. Young, R. E. Palmer.

SCHOOL DISCIPLINE.

It was decided by the school board at the commencement of the year to employ the best teachers, and we have endeavored to carry out that decision to the best of our ability. Two things seem to be essential to the prosperity of our schools: First, good, live teachers — no drones — who are thoroughly qualified and well prepared for the work; and second, the hearty co-operation of the parents. On the whole the schools have been quite satisfactory the past year. We do not think there has been a poor school, certainly not a very poor one, still there is much room for improvement.

We have made a few selections from a pamphlet published by the Bureau of Education, Washington, D. C., as expressing our views on the discipline and general management of schools better than we could do it, and we hope the teachers the coming year will pattern after the suggestions here made, so far as possible, and that their efforts will receive the hearty sanction and support of the parents, as they certainly will ours.

"A system of discipline, to gain the respect of the pupils and to accomplish its object, must be inflexible, earnest, strong, thorough. The very fact of such a government has a silent but powerful influence in preventing evil and securing obedience and fidelity.

"Both the master and his pupils must work. Indolence in him begets idleness and recklessness in them. Life, energy, and industry manifested by him will be at once reproduced in them.

"The studies pursued must be adapted to the capacity and standing of each scholar, not so difficult as to cause discouragement, nor so easy as to allow idleness. His time must be fully occupied and his energies severely tasked.

"Kindness is another powerful agency in the management of a school. By this, as exemplified in the life of the true teacher, I mean his uniform good will, earnest sympathy, and hearty generosity habitually exercised towards his pupils.

"Nor is severe punishment to be regarded as the 'last resort.' When it may be inflicted at all, it is the first resort and the true remedy.

"Recitation is the exercise of expression, and, like study, belongs wholly to the scholar. Study and recitation are the principal means of gaining mental power and practical ability. Both are indispensable to the end in view, if not equally important.

"Written answers have the advantage over verbal, that they bring the scholar under rigid examinations in other departments of primary instruction. A written answer exposes his penmanship, orthography, use of capitals, punctuation, and forms of expression. Hence, this method of examination should be practised as often as time and circumstances will allow.

"Teach subjects, and not books; teach classes, and through the class drill the individual members; allow no interruption while classes are reciting; aim to make the class recitation attractive and interesting; and, above all, inspire the pupils with earnestness and enthusiasm in the business of the school."

THE DISCIPLINE OF GOOD MANNERS.

This subject, which our fathers seem to have regarded as of great importance, has been fearfully neglected in these latter days. As a consequence, our children in the family and school practise only rudeness and insubordination. To such an extent has this department of education been neglected of late in our country, that we have received merited reproach from other nations.

LITCHFIELD. — Mary W. Griffin, Zachariah K. Whittemore, John Parker.

THE NEW SYSTEM. — READING. — BUSY WORK.

The introduction of a new system, or the modification of an old one, always awakens the spirit of criticism, and the new is tested in the face of strong opposition. This is especially true of what so vitally affects the community as the public measures adopted for the education of the children. The thousands who have become famous in the several professions are looked upon as monuments attesting the perfection of long-established school systems, and any modifications, it is feared, will hinder the mental development of the rising generation, and also prove injurious in other directions. So slowly do latent forces produce changes, it is not surprising that no impression is made upon the community, or that the beneficence of enactments in accord with the new conditions fails of general recognition. As regards the new school law, the demand for a practical exemplification of its merits before *cordially* accepting it induced attention to its workings, and this was the best possible environment for testing its value. The record of visitors upon our school registers, exceeding in number one half the inhabitants of this town, is incontrovertible evidence that a knowledge of the effects of the "town system" upon the school work has been obtained by personal observation.

With less than forty children of school age, it was apparent that the best interests of the pupils would be advanced by reducing the number of schools, and this was effected by transferring the six members of No. 4 to No. 1. It necessitated but a slight change, as one pupil had received her school education at No. 1, and others had been instructed there when the school in No. 4 was not in session. The fall terms of the three schools were arranged to afford the benefit of two terms to all who chose to improve the opportunity offered. Pupils from Nos. 1 and 3 more than doubled the membership of the center school and trebled the profitableness of the very pleasant term. At its close, Nos. 1 and 3 welcomed pupils from No. 2. The punctuality of scholars located a long distance from the school-room deserves special mention.

The introduction of Swinton's Readers gave entire satisfaction. New matter increased the interest in reading, which enhanced the effects of careful training. One selection that delighted the listeners was rendered in a manner rarely equaled by a class of the same age. Too rapid utterance and consequent indistinct enunciation were noticeable faults. Their prevention belongs to the first year of school life, and the phonic method of instruction in reading is a wonderful aid in this particular, as illustrated by a class of five years of age, at the last session of the teachers' institute. Among the expedients adopted to secure the correct combination of letters by the pupils was a spelling-school, in which all the schools participated, and the afternoon devoted to this orthographical exercise, in connection with rhetoricals and vocal music, proved a profitable one. Besides the usual branches taught in our schools, vocal music has received attention in Nos. 1 and 3, and drawing in No. 2. The progress in what are termed the "solid" studies might be noted, but we will pass to another subject.

It is somewhat difficult in a mixed school to keep the smaller children properly employed. Thirty minutes is the limit of time that they should be required to devote to any exercise, and with a multiplicity of matters demanding the attention of the teacher, skill and ingenuity are taxed if the little ones always have something pleasant to do. A good deal of time out of school hours spent in devising means to interest and instruct them will assist in the solution of the puzzling problem. Simple objects, as colored cards, paper, leaves, toothpicks, furnish a variety of occupation, when their use is directed by a versatile genius. And just here we will say that the wages of a teacher are not for the thirty hours' work in a week, as is so often stated. The progressive instructor prepares for the proper discharge of duties by daily study; oftentimes the discovery of the one thing that arouses a dull mind costs hours of close thought.

LITTLETON. — Warren McIntire, Milo H. Harris, F. C. Albee.

EFFECTIVE WORK. — HOME INFLUENCE AND DUTY.

It is somewhat encouraging at the close of the present school year, under the workings of the new school law, that we find less dissatisfaction in the several school departments than at the opening of the year, more sympathy, and expressions of a desire for its prosperity.

The grand explanatory clause that "The said school board of each town shall provide schools within the limits of said town at such places and times as in their judgment shall best subserve the interests of education, and shall give all the scholars of the town as nearly equal advantages as may be practicable," has been the basis for the efforts of your school board. By a careful consideration of the above clause it will readily be seen that the aim of the law is that the wealth of the entire town district is common stock, taxable, and responsible for the education of each scholar in town.

No change has been made or attempted arbitrarily. An effort has been made to unite the school interests of No. 13 with Union school district, and an offer of a very commendable plan, as we think, of union of interests with said Union district is now awaiting the acceptance of the citizens of No. 13, which, when accepted, will greatly enhance their (No. 13's) educational advantages. The uniting the school interests of Nos. 11, 18, and 19, and building a suitable schoolhouse, is a matter to which your board most earnestly wish to call the attention of the town district, and request the citizens of Nos. 11, 18, and 19 to take proper measures to bring about its immediate consummation. By the report of 1886 there were thirty-two scholars in the three districts. This year thirty different pupils are enrolled, and the schoolhouses in these districts are unfit for school purposes. No. 12 is also in deep distress, and when we report the house as unsuitable, and badly located, we only report the common saying of former superintendents as to its unfitness for school purposes. A small outlay in repairs may tide the thing over for a year or two. In the near future better provisions must be made for the scholars in this department.

In conclusion permit us to call your earnest attention to more home interest, more fireside instruction. A few moments each evening or morning, or both, devoted to assisting your child in spelling, reading, primary arithmetic, etc., when the pupil is commencing these branches and does not know how to study, will add much to the progress of the pupil, and serve to kindle an unbounded interest in your pupil, your teacher, and your school. Do not abandon your school to the management of others; visit it, note its excellences, recommend plans for improvement, discuss educational matters *pro* and *con.* See to it that you are having a good school; if it is not satisfactory make immediate complaint. Unite your effort with that of the proper officer of school to make the services of your teacher the most profitable. The educational interest of your community is one of your chief duties, your highest obligations.

LONDONDERRY. — WM. P. NEVINS, L. H. NESMITH.

ATTENDANCE.

A prompt and constant attendance of pupils is essential to the best general results of a school. Are our boys and girls receiving the greatest possible benefit that they should from the money appropriated for school purposes? The large number of absent marks (four thousand and twelve cases reported in the registers) seems to suggest a negative answer. Who is responsible for this loss of schooling? Nos. 1, 3, and 6 present the most praiseworthy examples in their percentage of daily attendance for the year. Forest G. Kimball, only five years of age, living in No. 6, a mile or more from school, deserves special mention for his perseverance in not being absent or tardy during the whole school year. Tardiness is another evil, and the permission of it in school is but a training of our children to bad business habits, and a tardy person in any capacity is an annoyance. With few exceptions, a child who is to attend school may be in his seat at the appointed time, and any failure should be accompanied with a good excuse from the parents, who should co-operate in the endeavor to train the child in the way he should go.

SCHOOL DISCIPLINE.

True discipline has for its aim the training of the mind and is distinct from punishment, except as the latter may be a means to secure the end, and is a part of the child's training. The discipline of a school is seen in the lessons as well as in the quiet moments of the pupil. The teacher who allows pupils to read prose in a monotonous manner, or to spell rapidly without pronouncing each syllable in the word, fails in true discipline. The orderly passing to and from the room contributes much to the attractiveness of the school, but more to the advancement of the children, making them orderly instead of abrupt, graceful rather than awkward, and tends to that polite and courteous manner which elevates the mind. For these reasons the discipline should extend to the playground by the teacher's presence as much as possible. Under her watchful care profanity and vulgarity can be prevented, rough plays, incorrect language, and bad manners improved.

MANCHESTER. — Wm. E. Buck, *Superintendent.*

HIGH SCHOOL.

From the character and extent of what I wrote in regard to the high school in my report for 1884, it may be properly inferred that I regard this school of great importance. It is a good school, but it can and should be improved. The prevailing notion that the master ought to confine his whole time for recitation work as closely as his assistants to a particular set of classes is a mistake, and a bad one. Under such a course, his personal influence and teaching power can be directly felt only by a small portion of the school, when it should be felt largely by every pupil. It can be arranged, too, so that this desirable result may be accomplished, a result desirable because it should, and I believe would, elevate the whole tone of the school, pupil and teaching force alike.

To do proper work at the high school, the master should have at least a third of the recitation periods at his disposal for utilizing about his school all the ability he has, where and how his judgment dictates. This should bring him, generally, at every period when not engaged in the recitation of his own special classes, into one or more of the class-rooms of his assistants. What means the marked difference in the salaries of the high-school teachers, except that the master's influence should be exerted and felt for the good of all his pupils and go out helpfully to his assistants? How can he better aid the latter than by conducting recitations in their presence, exemplifying his best methods of instruction? He would thus be constantly employed, and continually coming in contact with pupils in other classes than those of his own set. Might not the assistant, always present and observing his methods of instruction, also obtain hints that would be utilized to advantage? For the purpose of affording such, he might at certain recitations daily, first for one assistant, and then for another, conduct the recitation in certain studies for days at a time. At another period he could inspect the work of others, to suggest improvements or determine how best to accomplish them. Can there be any doubt that by such a course the influence of the master would be widely felt throughout the school, and that, too, for its general improvement? For, by pursuing such a course, it is readily seen that the master would come in direct contact with nearly every pupil in his school in such a way that he would be able well to understand the ability and chief characteristics of each. And would not such an understanding upon the part of the master enable him to get a far stronger hold upon the individual pupil, and so have a vastly greater power over him for good? Our high school has been kept small, largely because nearly as many as have graduated have annually dropped out of it. Let us give the master his proper influence, that he may know when and how to extend the encouragement that will hold pupils to their early ambitions. It is bad for them so soon to get into the habit of giving them up, especially when so laudable a one as a contemplated course at the high school. A turn from such may prove the blight of a life.

I said that arrangements could be so made that time would be afforded for the work above outlined for the master. I will proceed to indicate how. There are six teachers at the high school, each having five recitation periods daily, or time for thirty recitations which average about fifty minutes each. Now change the sessions so that there shall be two, daily, of two and a half hours each, instead of one of three hours and another of two, as now. Let the morning session be from 8.45 till 11.15, and the afternoon from 1.30 till 4, without any recess except the noon intermission of two and a quarter hours. Each session can then be divided into three recitation periods of fifty minutes each, and thirty-six such periods thus secured daily to the six teachers there.

Let the master regularly instruct a particular set of three or four classes during a corresponding number of these periods, and have two or three others for doing the general work in the school before outlined. There will then remain an apparent excess of three or four recitation periods; but they are needed to carry out the plan, as far as may be, for which the assembly-room was specially provided with individual desks, viz., to afford a quiet room for study under the eye of a teacher. There are also other purposes for which these periods could be used to the great advantage of the school.

It occurs to me that the only objection that any one can raise to the proposed changes is the abolition of the recess at some intermediate period of the sessions. Such objection, however, is not valid for a school of the grade under consideration, for sessions of so short duration. There is abundant evidence that, for years together, pupils of grammar-school grade have been held in sessions of three hours' duration upon the "no recess" plan, not only without detriment but with great satisfaction to all concerned. The plan does not (as many imagine) presuppose a deaf ear, or any lack of attention, to the calls of nature.

The changes suggested are submitted for your immediate consideration, in the belief that, put upon any fair trial, they would speedily result in greatly improving the efficiency of our high school. The plan of conducting the high school as proposed is, in its main features, not an experiment, but a plan long tested, favorably known, and in common practice.

MARLOW. — JONAS W. FLETCHER, PERLEY E. FOX, NATHAN T. BROWN.

THE NEW LAW.

We have arrived at the close of the first school year under the new school law and no injury has been done to our schools. Your committee have had no more money to control than has been in our schools for the past few years. Yet the statistics show that we have had ten weeks more of schooling than under the old law, with a larger balance in the treasurer's hands. Nothing was contributed to the school funds by districts. Our village schools have lost nothing under the new law, while our small schools have gained privileges they never enjoyed before. No decrease has been made in the number of our schools. It seems a pity to maintain schools for four or five scholars, yet it is better to do so than to unite schools without the consent of the parents interested. But if no decrease is made in the number of our schools it does not seem right that our largest schools should lose their present length of school in order that the small schools may be of the same length. But the prospects are that the coming year all of our schools can be of equal length with injury to none. Undoubtedly the new law can and will be greatly improved, but to repeal the law and go back to the old system would not be for the interest of the schools in Marlow.

MERRIMACK. — Warren W. Pillsbury, Charles S. Nesmith, George E. Patterson.

PROFITABLE READING.

The first year of the "town system," just ending, has proved in nearly all instances beneficial to our schools. During the summer term there were nine schools in session; the pupils from No. 2 school were conveyed to ths schoolhouse in No. 8, and but one teacher employed. Upon the completion of the new schoolhouse in No. 2, your committee endeavored, by perfectly fair means, to have the two schools unite in the new building, but met with unreasonable opposition, resulting in two very small schools being kept where there should have been but one, and that one smaller than a school should be to do the best work. As a whole, both teachers and pupils have worked well together, with good results following.

The attendance during the winter term at Reed's Ferry was much interrupted, due to sickness among the pupils. The other schools average about as in other years. There was no school at the old district No. 11 during the year, for the reason that only two scholars were reported to the board by the selectmen. The half district known as No. 10, being without a scholar, was given up. Six new seats and desks were placed in the school-room at Reed's Ferry. Ample blackboard surfaces were added to Nos. 5 and 7 school-rooms, and some necessary repairs made on most of the other school buildings. A new well was dug in No. 1 school-yard.

No change in text-books has been made. Language Lessons were purchased by the district and placed in Reed's Ferry school, and the resulting work was satisfactory. In most of the schools excellent work has been performed with Colburn's Mental Arithmetic.

The wants of the schools are many, especially better out-buildings, which are at present, with one exception, a disgrace to the town, and should be at once put in a safe sanitary condition, no matter what it may cost.

New furniture should be placed in all school-rooms where needed as fast as practicable. No. 9 seats being the worst should be replaced this year if possible.

All of this work requires money, and we trust that the town will remember this, and raise or appropriate from time to time as liberally in the future as in the past.

Your committee fully intended to have all scholars have an equal number of weeks' schooling, but owing to the difficulty before mentioned in school No. 8, they have had twenty-six weeks, when they might have had thirty-two weeks. The committee consider that No. 8 school is entitled to an additional schooling of two weeks the coming year.

With the liberal sum which this town has for its schools, we should have the best schools in the country, and as long as you have a board of education, why not let them do the work to make them so, without interference? You will find it better for your children and yourselves in the future.

In speaking of the schools, we have designated the old

No. 12 as No. 10 school, that being the number of schools in session this winter.

The number of visitors at the schools during the year has been in excess of at least the past seven years, the total number being 431, exclusive of the visits of the committee, which were seventy-nine, making a grand total of 510. This shows an interest which cannot fail of being of benefit to the schools.

The teachers were requested to take one day during the fall and winter term for the purpose of visiting schools. They were also urged to attend the teachers' institute.

MILFORD. — A. W. SMITH, M. A. LULL, D. HEALD.

THE OBJECT OF THE PUBLIC SCHOOL.

Our public schools are conducted in accordance with the theory that it is their province to furnish an opportunity to all the children of the town to acquire so much knowledge, and so much discipline of the faculties, as is necessary to prepare all to enter, with a good chance for success, upon any of the practical affairs of life. Our schools propose to give to the children the opportunity of obtaining that knowledge and that cultivation of mental power, which will, in due time, bring them to the various occupations of life, ready to pursue them in the most intelligent and most productive manner.

Our schools should aim to cultivate that general intelligence and reflecting spirit which will bring the young to their practical duties with strong minds and good hearts. In doing this the schools will produce an education which will prevent a man from being lost in his business. They will furnish him with a knowledge of principles, and the power of self-control. This knowledge and power will prove the source of endless progress, and prevent the possessor from placing a higher value on the means of living than on life itself.

A liberal education has been deemed necessary for any one in the professions, but unnecessary to success in the manual occupations. Young people frequently leave school before their courses of study are completed, believing that the teachings of science and the refinements of literature have no appropriate place among the acquisitions of business men. The modern experiences of business men are leading them to a change of opinion, and they are now inclined to choose the graduates of the high schools and colleges, rather than the uneducated, for the business capacity which a generous culture is adapted to produce. Secondary instruction they find is as necessary to guide the hands to successful physical, as it is to guide the faculties to successful mental labor. The artisan as well as the artist, the business man as well as the professional, the private citizen as well as the law-maker, must be lifted above the mechanical operations of their work, by a knowledge of causes, and by skill in the application of principles.

If one passes successfully through all the grades of our schools, he will be fitted to make, under the guidance of his own acquired knowledge and trained powers, all other acquisitions necessary to enable him to occupy, with credit to himself his place in life.

UNGRADED SCHOOLS.

The ungraded schools have had a prosperous year. The educational results obtained from the year's work, and the general condition of these schools, are all that could be reasonably expected of schools of a mixed character. The teachers have not been sparing in their efforts to make their schools the best of their kind. In an ungraded school, however small it may be, the number of necessary recitations each day is greatly out of proportion to the size of the school.

These schools, with one exception, are very small. The North, Federal Hill, and Shedd do not average over ten scholars per term. The Howard and Osgood average about eighteen per term. The Pine Valley has from forty to fifty each term, as many if not more than are desirable for one teacher to manage, especially if the multiplicity of classes and the general character of the school are taken into consideration. In connection with this school it is fitting that due credit be given the teacher who for three years has had control of it, and who by her indefatigable labor has brought it under excellent discipline and given it a standing above the average of schools of a similar character.

The Abbott school was closed after the spring term, because it was so small, and the scholars, with one or two exceptions, could be just as well accommodated in the village; and the funds required to carry on that school were needed for a new primary school. It would be desirable to deal in like manner with the North school, but the pupils of that school are too young to be required to travel the extra distance to the graded schools. Some arrangement should be made next year to reduce the expense of the Federal Hill school.

GRADED SCHOOLS.

Unquestionably the crying evil in our graded schools is their crowded condition. The number should not exceed forty for the accomplishment of the best results. In no case should the number in charge of a single teacher exceed forty-five.

With a number greater than forty it is impossible for a teacher to give such attention to each scholar as is absolutely necessary for the scholar's proper advancement.

Some of the disadvantages arising from too large schools are as follows: Hearing of the recitations occupies all of the school-time; there is no opportunity for proper explanation of the lesson for the succeeding day; no opportunity for finding out how much the scholars understand of what they have glibly recited; no time for oral instruction on matter connected with the lesson but outside the book, matter which can always be introduced by a live teacher to interest and instruct the pupils.

MONT VERNON. — J. W. Carson, W. H. Kendall, C. J. Smith.

THE NEW SYSTEM. — EXAMINATIONS. — TEXT-BOOKS.

We herewith submit our annual report of the schools of Mont Vernon, as they appear to us. By the action of our law-makers the old district lines have been obliterated and instead of five separate corporations we now have but one. While this may seem a great departure from the method of our fathers, yet upon careful reflection it will be seen that it works no radical change in the educational system of this town.

The equalization of school property has made heavy taxation in some of the old districts, but not so large an outlay as would have been required for the construction of new buildings to take the place of those now unfit for use. We have endeavored to comply with the intent of the law by giving the pupils in every part of the town as near the same advantages for instruction as the unequal distribution of our population would permit.

Our first work in the care of schools was to call a meeting of the teachers for a written examination. Our main care in making out a list of questions to be submitted to the teachers was to have it of sufficient breadth to cover all the branches taught in our district schools.

A written examination — though not always a pleasant task — is, we believe, the best test of a teacher's ability. We need good scholars to teach even in primary schools, and a candidate who cannot write answers to primary questions without gross errors in composition and orthography should fail to receive an appointment. Then, again, we need good disciplinarians, for the person who fails to maintain good government must fall short of the mark set by the accomplished teacher.

The examination showed a proficiency equal, we believe, to the average of our district-school teachers, and in some cases the papers were excellent. With the prerequisite of sufficient scholarship the teachers commenced their work with a just appreciation of the importance of their profession, and with the understanding that in the present age moral suasion is the chief factor in school government, and here let us remark that the question of school government is a difficult one to deal with. If teachers fail to maintain good discipline where is the fault? Sometimes with them, generally with the parents: now let no parent censure us for making the assertion until they have given the subject careful thought. If pupils in our public schools are to be governed by an appeal to their generous impulses and consenting reason, is it not just to ask of parents that they so train them at home that they may enter our schools and become obedient pupils under this mild suasion? It is not our purpose in making this report to indulge in unjust criticism; we would gladly overlook all errors of omission and of commission, but if we comply with the law that makes a report necessary, we must write all the facts as they appear to us.

There has been a neglect on the part of parents in not furnishing their children with books, and yet the fault was not all with the parents; this committee being in part the delinquent. The teachers notified early in the year that many of the pupils were in need of books and they should have been furnished at once. A proper supply of text-books is a prime necessity, and we hold and advise that no teacher should allow a scholar to make a practice of studying his lesson from the books of others. The statutes allow the committee to procure all needed books, and if not paid for by the parent or guardian, the amount is to be put upon said parent's or guardian's tax-bill for the ensuing year and collected the same as other taxes. The cost of school books is a large item in our educational expenses, and families of limited means find it quite a burden. If our law-makers would take the matter in hand and give us a uniform system throughout the State, a large outlay would be saved to the people of New Hampshire, and the cause of education quite as well subserved. Before proceeding to a notice of the several schools let us add that our intention at the beginning of the year was to employ home teachers in preference to those applying from other places, and this policy has been adhered to whenever practicable. We believe in employing home talent, other things being equal, and there is no reason why our teachers are not the equal of any of the same grade, as they have grown up under the nurture of one of the best schools in southern New Hampshire. Teachers should strive to be accurate in all of the branches they undertake to teach, and in no department should they exercise greater care than in teaching a correct pronunciation of our mother tongue. Let it be understood that the teacher and not the committee must govern, teach, and in a great measure be responsible for the success of his school. With due regard for, and courtesy toward our teachers, we submit that the first duty of a committee is to the pupil, and when through favoritism or other cause the schools are put in care of incompetent persons it is reasonable to charge that committee with neglect of duty. After a year's trial we are inclined to think the new system answers the requirements of this town better than the old method. We have been able to give all of our scholars nearly the same number of weeks of schooling and as many as are considered profitable by our best educators.

MOULTONBOROUGH.—James E. French, Joseph G. Abbott, Geo. N. Bryant.

SCHOOLHOUSES.

A portion of these are unworthy of the object for which they are used. The schoolhouse is itself an object lesson to the pupils. As such it leaves its impression upon the mind of the pupil, the influence of which is either elevating or degrading. It is not necessary always to keep objects of contempt out of the way of the children, but it is necessary that they should not be combined with education and good morals. An unsightly church or a dilapidated and uncomfortable schoolhouse tends rather to lawlessness and vandalism than to refinement and regard for the claims of society. The boy will rarely be found so debased that he will break the glass, deface the walls, or mar the desks in a fine house. It is a civilizer, an object lesson, that is every day fortifying him with a feeling of manliness, self-respect, and regard for the rights of others. It is due your children that they be provided with better houses for their education.

PARENTS.

It is no unusual thing for parents to complain of the quality of the school, and they sometimes have just reason to do so, but it is often the case that the teacher is made to bear an unreasonable share of the blame. While they are patiently and nobly laboring for the highest good of all the pupils, a part of the parents, unwittingly perhaps, are placing obstacles in the way, and, so far as their influence goes, laboring in the opposite direction. A fit place for instruction is not provided, the children are not sent seasonably to school, one or more days every week some of them wish to stay at home and are allowed to do so.

Parents should understand that they have as much to do with the quality of the school as the teachers. See that your children are there on time every day, and if they have never been taught prompt obedience at home, be glad that they may have instruction in that important matter at school. No teacher can make a good school without the co-operation of the parents. If you must blame the teacher see you do it not in the presence of your children.

TEACHERS.

We have not gone abroad for teachers. This has not been adopted as a rule of action, but we recognize the propriety of using home material when it is as good as could be had elsewhere at the same rate. It could not be expected that all would be equally successful, but most of them have reached such a degree of usefulness that we should not hesitate to employ them again. Five made their first effort this year, a part of them doing exceptionally good work, in saying which no disparagement is cast upon the others, for all did well as beginners. Our teachers are a faithful band of workers, and truly desirous to do their whole duty, yet if some could put a little more animation into their style and a little more energy into their words, it would add much both to the appearance and the real value of their school. While a boisterous style is to be deprecated (we have none of this), a weak, spiritless manner is none the less so. This is the weak point in some of our strong teachers. A clear, strong voice, enunciating with some rapidity the questions and demanding like quickness and force in the answers, soon awakens life and energy in the pupils. The opposite proves to be true in too many of the schools. When a pupil hesitates on each question, then answers in a weak, uncertain voice, perhaps with the rising inflection, it is pretty safe to say that there is a lack in the teacher of what is called "snap." One school suffering from this disease, and said to be past cure, was very hopefully reformed by a sprightly teacher in one term, and others made marked improvement. We hope in this matter the proverb may hold true, "A word to the wise is sufficient."

NEW BOSTON.—CHARLES F. DODGE, GEORGE D. MARDEN.

A VERY SUGGESTIVE AND INSTRUCTIVE REPORT.

In assuming the duties which fell to us as members of the board of education, we were aware that a majority of the people looked upon the new law with disfavor, and that any changes which we might make in the location or management of the schools would be open to their criticism. Our knowledge of the schools throughout town, aside from the few with which we had been personally connected, was limited, and, in order that we might act with intelligence, we found it necessary to visit the different schoolhouses, ascertain their condition and needs, and make a thorough canvass of the scholars likely to attend. From the information thus gained we felt justified in dispensing with schools in Nos. 3 and 14, while in Nos. 7, 11, and 12 it was thought practicable to have but one term. If the schoolhouses were more conveniently located it would be easy to still further decrease the number of schools without serious inconvenience to any. Until such changes are made our schools will lack interest by reason of the small number of pupils, and the terms must necessarily be short unless more money be appropriated for their support. Last year the smallest school in town cost over one dollar per week for each scholar attending. This year, by reducing the number of schools, we have lowered this to 62½ cents.

There is still a wide difference in the cost of schools through town, as may be seen from the following:

No. 2, with eight scholars, cost 62½ cents per week for each scholar attending; No. 5, with twenty-two scholars, cost 24½ cents per week for each scholar attending; No. 8, with twenty-four scholars, cost 32 cents per week for each scholar attending.

TEACHERS.

In employing teachers we have endeavored, so far as possible, to secure those who have had previous experience, but in this we have labored under a disadvantage, as teachers, like others, prefer to go where they can obtain the most money, and other towns with longer schools have offered greater inducements than we. Notwithstanding this obstacle we have been able to secure teachers who have generally proved equal to the wants of the schools. Many have had long experience, and all have labored hard to raise the schools to a standard of excellence of which they may be justly proud.

NEWBURY.—Clarence B. Cheney, Silas W. Dana, Richard T. Muzzey.

EQUAL ADVANTAGES.

Your board have taken all things into consideration, and have endeavored to give all scholars as nearly equal advantages as could practically be done. In nearly all schools we have given twenty weeks. Where there has not been that number, the scholars have had a chance to attend some other school, so that none have had less schooling than last year, except No. 5, which last year had thirty-one, this year twenty-nine weeks. The question may arise, Why has this school had more weeks than others? There are two reasons: First, the tax-payers of this school pay about one fourth of all the school money, and, in justice to them, are entitled to more than one that pays only about one fifteenth; second, there was old money enough for three weeks, so that there have been only six weeks more than other schools have averaged.

It has been our endeavor not to see how cheap a teacher we could get, but to get teachers that would accomplish the greatest amount of good. Of course, in some instances we have been disappointed, but on the whole the majority of teachers have been better qualified for the work of education, and there has been a greater interest by scholars. One great reason for the interest is that nearly all parents have given the teachers their support. Parents, if you would have your schools prosper, give the teachers your support. Do not say anything in the presence of your children that will lower him in their estimation. If you have grievances, go to the teacher, and not to some neighbor or some loafing-place.

To any who contemplate teaching, thinking by so doing that they can gain a livelihood easier than by some other employment, we would say, "You will be sadly mistaken, for no teacher can have true success unless he is well qualified to instruct and enters into the work with his whole soul. If you wish to have success, prepare yourself for the work as you would for any other vocation. Do not be content with what education the district school affords, but, if possible, attend some school of a higher grade."

NEW HAMPTON. — MOSES H. MERROW, JOSEPH S. WHITCHER, JOHN P. SMITH.

RESULTS OF THE NEW SYSTEM.

Number of schoolhouses in town, ten; number in respectable repair, six; in poor condition, four, not suitable for school purposes, unless they are shingled and otherwise repaired, except in fair weather, when there is no necessity for protection from the inclemency and rigor of the seasons. There are two union houses. The one with Meredith is in fair condition; the one with Ashland and Center Harbor is of small value. The poor old knowledge-box is protected by the shade of the surrounding woods. Can it be said that the condition of the schoolhouses is a fair index of the interest taken in the cause of education in the several localities where they are situated?

The houses in Nos. 1 and 6 are very much out of repair, and as soon as practicable a new house ought to be built, or the one in No. 6 moved to a central point and repaired, to accommodate all in this part of the town. It is of no use to repeat the old story about the dilapidated condition of our school buildings, but we should provide ourselves accommodations that we shall not be ashamed of, at least. It is a duty we owe our posterity.

The number of schools under the old district law has usually been thirteen and two union. By referring to the reports of your superintending committees, it will be seen that some of these districts have not a sufficient number of pupils to make desirable schools. In order to have a profitable and successful one there must be a reasonable number of pupils. Your board for the present have reduced the number to eight, and one union with Meredith. We have provided for a few pupils outside of the district. By so doing the scholars have been accommodated and the length of the schools increased to the average of nineteen weeks. This has also enabled us to employ teachers of experience. As a rule the schools have been a success and profitable to the pupils, and a decided advance has been made. If the school, in your judgment, in your locality, has not come up to the standard hoped for, look at home and see if you can discover the reason. Are your children all right there? Are they taught obedience? Do they respect home government as they ought? Do you have interest enough to visit the school and see for yourselves how the scholars are progressing? This is of the utmost importance. There may be an opportunity for you to learn something. You may perchance discover some error which, if corrected, may be of untold advantage to the scholar. We urge upon you the necessity of looking after your own children. By so doing you assist the teacher and secure to yourselves a good and profitable school. One thing more: Let us never allow ourselves to speak lightly or disrespectfully of a teacher in the presence of our children. The instructor must be respected and sustained or the school will prove a failure. The teacher is the guide for the scholars, but the work each pupil must do for himself.

We see much that could be done to improve our schools. But this year being really an experiment, we have not felt at liberty to make any extensive outlay or change. But the necessity of a uniformity of text-books is imperative, and each school ought to be provided with a globe, maps, etc. We hope an increased interest in the cause of education will be developed as time goes on.

NEW IPSWICH.—W. R. Thompson, Joseph E. F. Marsh, Jr., A. F. Shattuck.

THE NEW SYSTEM ON TRIAL.

With unfeigned reluctance we address you in this "new departure." To decide what you want put on record is in this case the hardest part of reporting. Most of our doings you already know, some you do not need to know as you did need it when two orders of school officers must understand each other in order to complete harmony.

An old report of your town says wisely, "Our school system; can it be improved?" The answer developed in the nine years since past is, we can change it — whether improved you must judge. We commenced our year convinced that the spirit of the law required change, and that no board could meet the demands of the oath of office in a town like this without combining and reducing the number of schools, so we faced the problem and reduced. If any of you who love to exercise the freeman's right to criticise think it was a pleasant task, let him remember that by the plan adopted two of the board not only lost their own schools, but drew upon themselves the terrors and the tears of some of their own friends and of the best citizens of the town. Such tasks are hard enough when the way of duty is plain, but when necessarily involved it is doubly hard.

At our first meeting it seemed best for the member who best knew the schools, on account of experience, to become chairman of the board, and he was so elected; also for the member who can write decently to keep the records and hear the requests for material aid. It was proposed to employ home talent in taking teachers, and also, when otherwise allowable, to hire those who could board at home, that their pay, though moderate, might be fair remuneration. Also it was voted to make the terms of school in different localities as nearly of a length as practicable. Suggestions were made, and considered also, as to the number of schools called for by the families so scattered over the town. Disbanding, we looked about, and studied, and made inquiries. One of the fairest of our leading citizens said, "It is merely a question of expense. Is it cheaper to carry scholars in a given locality to another school, or to carry a school to them?" On this basis decisions were made, it being always understood that an existing school must not be crowded.

The result of further interviews was, as you know, a decision to start in town seven schools, and these we have maintained. The six village schoolhouses and that near Reed's Hotel have thus been occupied. Had High Bridge district been small we could perhaps have brought these latter pupils there, but that school is large enough. Subsequent events have not led us to deprecate this arrangement, and we think we could hardly have done more wisely.

Some of the schools have been interrupted by sickness, etc., so they are not strictly of a length, but it was our intention to make them so for the most part. By this plan it was required to bring pupils from No. 3 to the Center, and from Nos. 6 and 7 to Smith Village. Conveyance was accordingly provided from No. 3 schoolhouse and from John Whitney's to Smith Village. The idea was to make them walk no further than to their own school. In this arrangement we were quite successful, and the teams have been very regular and very prompt, never failing in a single instance save when the roads were completely blocked. Such is the system devised and carried out.

Now it is not for us to vindicate the law by which the district system is abolished save in its observance. We can but think wise parents prefer thirty-two weeks of good school, with pupils enough to keep up the variety, and so the interest, to a much shorter school, with three, four, or five scholars.

We can but hope, then, that the system will receive a fair and candid treatment until tried. It will certainly be an advantage in this town if we are willing to make it so. The law is not so rigid as to tyrannize over us. The schoolhouses in the sparsely settled districts can be used again as soon as scholars are found to warrant it. Indeed, wisdom and patience may devise far better ways than we have adopted the past year, and you may be sure that the coming board will welcome any light in the case that anybody will furnish. Our greatest anxiety is for the scattered ones, and if we can carry them to a far better school and for less than half the expense, it seems something accomplished.

NORTH HAMPTON.—Francis R. Drake, Elvin K. Amazeen, George L. Garland.

SCHOOL FUNDS NEEDED.

There are pressing needs at all our school-rooms that lack of money has prevented our supplying. Special appropriations are necessary in order to meet them. Don't ask what the law requires us to raise for school purposes, but what the future welfare of our youth demands. Let us make our schools in equipment—text-books, charts, etc.—the equal of the best in our land. It will pay. The men and women of the next decade will thank us.

Money is needed to purchase charts, that the branches taught may be better illustrated, and thus a clearer and more forcible impression made upon the scholar's mind. Especially are these wanted in connection with the study of physiology. Swinton's Readers have been introduced in place of the old Franklin, the scholars having become so familiar with the old ones as to have lost such an interest as is necessary in order for the best advancement to be made. Other changes in text-books would be helpful, and must of necessity come soon.

We would ask the citizens to consider the advisability of appropriating money for the free supply of text-books to scholars. This is required by law in Massachusetts, and some towns and cities in our own State have voted to do this. Its importance is recognized by those most interested in education in our land. We would also strongly press upon citizens, especially parents, the importance of visiting schools, that they may know for themselves the quality of work done, also for the encouragement that such interest would give to both teachers and scholars.

In looking back through English history — and the history of England, our mother country, is truly our own — we find among its rulers one who stands out, although he lived a thousand years ago, as the peer if not the superior of any other, whose character and achievements we shall do well to study,— the Saxon king, Alfred the Great. No ruler ever did more to elevate the English people. He established schools and courts of justice, although it was long before the art of printing was known. The great desire of his heart was to do right to all his subjects, and to leave England better, wiser, and happier in all ways than he found it.

In no way can we do more, as citizens, to make our town better, wiser, and happier than we found it, than by giving the children the best possible educational advantages. Cultivate fully their mental powers, always endeavoring to give them that which is purest and best.

Our future motto should be "Onward!"

NOTTINGHAM. — J. N. CILLEY, G. E. SMITH, W. T. LEIGHTON.

GOOD ADVICE.

The board have endeavored to perform their duties in the best manner that circumstances would permit, employing such teachers as could be secured with the means at their command, and making only such changes in schools as seemed to be for the interest of all concerned. It is impossible to preconceive a correct idea of the adaptability of a person for teaching. Hence, it is uncertain what kind of work will be accomplished by those who have had no experience. All the teachers have appeared to be faithful and conscientious in the discharge of their duties, and have succeeded according to their ability and fitness for the work. We deem it unnecessary and improper to point out the faults of any, but they will be considered in the future selection of teachers. It is our opinion that in some cases if the teachers had received the support due them from the parents and friends the result of their efforts would have been more satisfactory. We hope that parents will ever be mindful of the duties they owe to teachers, and whenever there is any radical fault of the teacher, kindly inform the board whose duty and pleasure it will be to investigate the matter and secure justice to all. We would recommend liberal appropriation for school purposes that in the future our schools may be made second to none in their efficiency for the advancement of education. *We would also recommend that necessary steps be taken for the town to furnish text-books to all scholars free, that a sufficient stock be kept on hand to supply the requirements of schools, and that proper regulations be adopted governing the management of the same.*

ORFORD. — CHARLES C. TALLMAN, *Superintendent of Schools.* JOHN BICKFORD, CHARLES C. TALLMAN, JOSEPH KIMBALL, *Board of Education.*

SUGGESTIVE DETAILS.

No. 1 had three terms of school of ten weeks each at a cost of $4.70 a scholar, and last year the same number of weeks' school cost $4.50 per scholar. No. 2 N had two terms of school of ten weeks each at a cost of $3 a scholar, and No. 2 S had three terms of school of ten weeks each at a cost of $3.60 per scholar. Last year with twenty-five weeks for the school year it cost $3 per scholar. The scholars in No. 3 were brought to No. 2 S at an expense of $80, and that amount is reckoned in as a part of the cost in No. 2 S this year. Last year in No. 3 they had three terms, thirty weeks in all, at a cost of $6.96 a scholar. No. 4 had three terms of school of ten weeks each at a cost of $3.24 a scholar. Last year thirty-two weeks' school cost $3.90 a scholar.

No. 5 is this year included in No. 7, and there is only one scholar. Last year only one scholar was returned as attending school from this district at a cost of $151.66 for three terms of thirty-two weeks for the school year. No. 6 had two schools of ten weeks each at a cost of $6.60 per scholar; last year only one term of thirteen weeks at a cost of $14.70 a scholar. No. 7 had three terms of school of ten weeks each at a cost of $4.60 a scholar. Last year they had thirty-two weeks' school at a cost of $7.90 a scholar. No. 8 had three terms of school of ten weeks each at a cost of $3.50 a scholar; last year twenty-six weeks' school at a cost of $6 a scholar.

The scholars in No. 13 and part of the scholars in No. 10 were united with No. 8 the past school year, thus decreasing the cost per scholar for the year just closed. No. 9 had two schools, summer and fall terms, of ten weeks each at a cost of $5.50 per scholar. Last year twenty-four weeks' school cost $8 a scholar. No. 10 had one school, a winter term of ten weeks, at a cost of $6.60 per scholar. Last year twenty-two weeks' school cost $10.30 a scholar. No. 11 this year had three terms of school of ten weeks each at a cost of $3.90 a scholar. Last year twenty-four weeks of school cost $6.80 per scholar. The scholars in No. 13 have attended school at No. 8 as above stated. Last year they had twenty weeks' school at a cost of $6 a scholar. There has not been any school in No. 15 this year. Last year one term of twelve weeks cost $20 per scholar.

The average cost per scholar for each term of school for the year just closed I find to be $3.90. Last year the average for the same was $6. The average cost on the whole number of different scholars in the district for the school year just closed is $8.80. Last year the average cost on the whole number of different scholars was $12 per scholar. It will be seen by comparing the above figures that the cost of schooling each scholar has been very much reduced and at the same time nearly all the scholars have had the advantage of a greater number of weeks' schooling. I believe it possible to still further increase the advantages of the scholars in some parts of the district and still decrease the cost very materially from the present figures.

The graded school at No. 2 S I consider a success, and any one who visited the summer term of thirty-five scholars under one teacher, with so many classes that less than ten minutes could be devoted to each recitation, to say nothing of the time every teacher is expected to devote to showing their pupils about their lessons, and then visited the graded school where the teachers could devote thirty minutes to each recitation, the advantages would be seen to be very prominent indeed. The schools in No. 8 take the lead of all the schools in town on order. At every visit I found the scholars quiet and studious, and I failed to detect as much as a whisper in my six visits. I wish I could say the same of every school in the district. Some of the schools were more or less injured by the teachers not having the hearty co-operation and sympathy of parents and patrons of the schools. If every parent would feel that interest in the teacher that they would if the teacher was their own son or daughter, their labors and duties would be much more pleasant and their work in the school-room more efficient. "Discussing people" in all walks of life is getting to be a very prevalent habit with all of us at the present time, but as regards teachers I say "Don't." Teachers are human, and consequently are not expected to be perfect, and if they are faithful in the discharge of their duties, there is no class of workers that are more entitled to the support and sympathy of their patrons than the teachers of our common schools.

The want of uniformity in text-books is a serious damage to some of our schools, and the subject has been repeatedly brought to notice in former reports, but the evil still remains unabated, notwithstanding we have a law on the statute books allowing any town or district to furnish free text-books for their schools. If the next Legislature will follow the example of Massachusetts and pass a law compelling each town to furnish free text-books, I think it would be a step in the right direction.

PETERBOROUGH.—W. H. WALBRIDGE, *for Board of Education.*

The organization of the board for the past year has been: Chairman, W. H. Walbridge; secretary and treasurer, E. M. Smith. The work of general superintendence of the schools, the hiring of teachers, purchase of school supplies, and all matters heretofore committed to the prudential committees of the several school districts, have been performed by the board. Acting under the

TOWN SYSTEM,

Which came into operation at the beginning of the present school year, the board have aimed to carry out the provisions of the new law, and secure, in a measure, the benefits to be derived under it, without instituting any radical changes in the methods and management of the schools. Believing, however, that fewer schools, and better, is the end to be aimed at under the town system, securing for all the pupils of the town, so far as practicable, the same educational advantages, it was considered best to reduce the number of schools outside of the village to five. Only two schools were discontinued, however, which would have been maintained under the district system, viz., Nos. 5 and 8. A portion of the pupils of No. 5 attended the "Valley school," taught by Miss Nahor, and others were placed in the "North" school. Owing to some dissatisfaction which existed among the inhabitants of what was formerly District No. 8, the board were unable to make any arrangement that would be mutually satisfactory to all parties for the accommodation of the pupils of that neighborhood. The result was that only one pupil attended the summer term of school at the "North." The notion prevails with some that in case a school is discontinued, the board of education are under legal obligations to provide means of conveyance for the pupils to attend some other school, whether the distance to that school be longer or shorter. Whereas, the law requires every child of school age, living within two miles by traveled highway of a place in which a public school is taught, to attend school at least twelve weeks each year.

LENGTH OF SCHOOLS AND NUMBER OF TERMS.

It is the opinion of the board that the number of weeks which each school should be in session should be uniform throughout the town. Three terms of ten weeks each, annually, are recommended as best adapted to meet the wants and requirements of the pupils. If this seems to some to be more than is required for the proper education of the rising generation, we would simply call attention to the fact that the average school life of pupils is much shorter than formerly. It is rarely that one finds in the public schools of to-day a pupil whose age is over fifteen — except those who take an advanced course of study as a preparation for college, or some other higher institution of learning. From seven to fourteen, or a period of seven years, is about the length of the school life of modern pupils. They do not get any more weeks' schooling now than formerly, when there were two terms of ten or twelve weeks each, annually, and boys and girls attended the winter term of school until they were twenty years of age.

It was found necessary to close all the village schools at the end of the seventh week of the winter term, owing to an epidemic which prevailed among the scholars.

PITTSFIELD. — D. K. Foster, James Griffin, A. L. Page.

A REPORT TO BE READ.

The school board, having attended to the duties of their office, make to the town their annual report, as required by law.

At the beginning of the school year, the organization of the board was delayed a little by the resignation of Mr. Drake, one of the members elect. Courtesy induced the acting members to offer the vacant position to Mr. Frank H. Sargent, who had been a nearly successful candidate for the place at the school meeting. His refusal to accept the empty honor made it necessary to look further for a third member. Mr. James Griffin at length received the appointment. The board at once organized by the election of D. K. Foster, chairman and secretary, and A. L. Page, treasurer. Mr. Foster was also selected to act especially as superintendent of schools.

The organization effected, the board went to their work with honest purpose, with a deep sense of the responsibility of the office, with strong faith in the new method, with an earnest desire for its success, and withal a lively recollection that the plan had been tried by the town once and cast aside as an offence. "Fears were in the way;" but taking the great cardinal's "Be just and fear not" for our motto, we set out. Mistakes, no doubt, have been made, wrong things done. For all this, we beg an indulgent and candid criticism and the forgiveness of those we serve. We are consoled with the reflection that the perfect unanimity and harmony that have pervaded every official act of the board must be a happy disappointment to the prophets who gave it their ill-omened "send-off" one year ago.

Our first duty was that of "providing schools within the limits of the town," as required by section 6 of the new law. And here the main question was to see how few schools could be maintained, and at the same time "give all the scholars of the town as nearly equal advantages as practicable." A temporary arrangement was made with the school board of Northwood, which accommodated the three scholars of the former District No. 10 for the summer term. The result not proving entirely satisfactory, the scholars were conveyed to the Mountain school during the fall term, at a saving of above half the cost of supporting a separate school in their own local district. The climate and the condition of the highways making it impracticable to convey these scholars to other schools in the winter term, a school was provided for them in their usual place, which was patronized by several families in Northwood. No outlay or income was occasioned to either party by this arrangement with our Northwood neighbors, the admittance of our scholars to their school in the summer being balanced by admittance of theirs to ours in the winter.

For the rest of the town, schools have been provided at the places where they were generally kept under the old system, and all have received an equal amount of schooling, if not of learning. The length of the school year has been twenty-nine weeks. The schools outlying the village have uniformly been in a high degree satisfactory to the superintendent, and we believe to all concerned. Individual instances there are that possibly merit more special remark and commendation, but we leave that for the present.

VILLAGE SCHOOLS.

In this branch of the report, the following is submitted: The intermediate school and the primary No. 1, both kept in the town-hall building, and the primary No. 2, taught in the brick schoolhouse, we think have come up to a higher degree on the scale of good traits than they have reached before, — higher in discipline, higher in instruction, higher in diligence, higher in aim, higher in attainment, higher in the estimation of the public. These schools are beginning to show what three apt, live women, devoted to business, can do for unregenerate humanity. The questions asked us on every hand almost daily by pupils and parents: "Is Miss Ring coming back next year? Is Miss Dow going to teach our school again? Mrs. Lane is going to teach our school next year, isn't she?" are no doubtful criterion of the quality of these schools. The right persons seem to get into the right place once in a while "in the course of human events," after all. A refusal of services has been obtained of these teachers for the next year. The board could ask no more, would accept no less.

But what shall be said of the things kept for a high school and a grammar school in an old-fashioned fabric at the head of the park, ycleped the academy? Just here the school board avow that they are neither individually nor collectively delighted with these schools. The chief pleasure yielded by them came with their expiring moments. The tabular statistics of the summer and the fall terms of the high school were made as truthfully as might be, from the superintendent's knowledge of it, obtained by personal visits and observation, the teacher having either purposely or negligently failed to return his register. Would that this were the only legitimate duty omitted in this connection, by the board as well as the teacher!

At the close of the first year's trial of the new plan, the board feel that they have, on the whole, good occasion to congratulate the inhabitants of the town on the progress and success of their schools. And they assure their fellow-citizens that the confidence in the town system which they had at the beginning of the year still abides, enlarged and strengthened by the diversified experience of the year, which they would fain hope may add to the efficiency of the future management, as it ought. Much, however, still remains to be done. We are deplorably — oh, how deplorably! — deficient in school equipments, in the ordinary things which in these days are so justly deemed essential to efficient school work. There is scarcely one respectable school-room in town. The best one is at Dowborough, and it took the better part of a hundred dollars from the school money to make that tenantable. Of apparatus we have positively nothing; no books of reference but an occasional dictionary; no library, save the merest embryo bud of one, just forming in the academy building, on the trust fund left by the lamented William E. Berry, and destined, we hope, to become a perennial monument inscribed with the donor's name and sacred to his memory. Where is the next man longing for posterity to rise up and call him blessed? In this matter of school requirements we ought to do better than our fathers, else we are not as good; for we stand on a vantage-ground and have the light of their example.

There can be no stand-still. The way is at a heavy grade. We must either be climbing up or we shall surely be sliding down. The ascent requires struggle; the descent nothing but a supine submission to the laws of gravitation. "*Facilis descensus*," etc. The question is, have we not coasted down on this line of school accommodations just about as near to that place without a bottom as it is safe to go? and would it not be the part of wise men to begin to ascend pretty soon? There are over fifty children of the legal age in town (mainly in the village) that have not attended school at all this year. Why? Simply because nobody has undertaken to enforce the compulsory attendance law. The board did not appoint truant officers to enforce the law because they had no accommodation for the violators of it. The district must have another school-room in the village directly. To refuse or neglect to provide it is to incur the liability to an indictment by the grand jury. There is an article in the school-meeting warrant covering this whole subject.

The board fervently deprecate the practice of going abroad for an education. We ought to be able to provide all the means for a thorough education at home. And are we not able? To assert it would be scandal. But admitting that we have not the pecuniary ability, as some try to imagine, to provide for our own wants, would it not all the more become us to put away our conceit and humble ourselves into a frame meet to accept benefits gracefully? The assertion that we, as a people, are wanting in business sagacity, in the common sense and forethought that provides for families and homes, would be answered with indignant ridicule. But what answer will you make to this simple, distinct, intellective, declarative, actual, positive sentence that in the matter of providing for our schools we lack the discernment to recognize a benefaction or a mercy when it is held right before our view? Somehow we don't seem to have a just appreciation of this class of blessings, or else we lack the tact and address to get ourselves into a fitting attitude to receive them. How else can be explained the listless unconcern which we manifest about the matter of the gift so generously offered by a native and former resident of the town, with the laudable method of honoring his own school-boy home by erecting for us a good school building, the very thing which is our own utmost need? Have we no duty in a matter of this moment but to stand, arms akimbo, mouth agape, and stolidly admire and never acquire the waiting munificence? Such apathy and indifference are uncivil to a magnanimous friend and cruel to a needy posterity. We know it is said, "It is more blessed to give than to receive," but for ourselves, in this case, we prefer the degree of blessedness that belongs to the receiver.

> "The quality of mercy is not strained;
> It droppeth, as the gentle rain from heaven,
> Upon the place beneath. It is twice blessed;
> It blesseth him that gives and him that takes."

PLYMOUTH.—Alvin Burleigh, Charles A. Jewell, Henry P. Peck, Daniel H. Currier, James A. Penniman, Robert Burns.

TWO YEARS OF TOWN SYSTEM.

In order that the account we now desire to render concerning the educational work accomplished during the past year may be as intelligible and interesting as possible, it may not be without advantage to call to mind briefly, by way of introduction, the most important results attained during the preceding year. The work was then wrought out under the new condition imposed by an entirely new system, and so the achievements of all subsequent years must look back to this for their full explanation, as all the increasing growths of the tree follow the laws involved in its germ.

Be it remembered, then, that when the responsibility for all the various educational interests of the town, those handed over to the State Normal School alone excepted, were lodged in our hands, the method of administering school affairs underwent a radical change, and that in three principal directions. The first involved the transference of the ownership of school property from the various original districts to the single and combined new district, attended at the time, indeed, with some apparent hardship to those portions in which the assessed value was limited. Nevertheless the end was attained without serious difficulty. The hardship is now a thing of the past, and it may be hoped the benefits will not cease through all the coming years. The material means and appliances, which must play an important part in practical education, are henceforth to be cared for by the collective wisdom and power of the entire community, as against that of isolated and limited portions. Before this report is concluded we hope to give some substantial evidence of the beneficial effects of this new departure.

The second line upon which the new *regime* reveals its most important modifying effects passes through the re-establishment of the local centers, to which the instruction must be carried, and from which it must radiate. These centers originally reached the number of twelve, and were finally reduced to nine under the old system, through depletion of population, leaving still two more than was reasonably required, besides the Plymouth portion of two union districts, equivalent to a third unnecessary center. The re-adjustment resulted in a further reduction until but seven remained, and these, it is believed, are sufficient to shed the light upon all. Some of the advantages hereby suggested are obvious. The houses of the abandoned centers, though of little value, have added a mite to the general resources, some of the remaining schools have received more pupils, the yearly outgo they involved has been cut off, and, most important of all, their reduction contributes to the lengthened and equal term of study, which constitutes the chief benefit of the improved system. The third direction in which our changed conditions came most clearly to view pointed to the fact that henceforth the single board of education was to be responsible, not only for the selection and management of all the centers of instructive influence, but also for the special way in which this influence was to be exerted. Hitherto the teachers had been chosen by the local committees, subject only to the criticism and possible rejection of the superintendent. Thus the primary and most important choice, to say nothing of numerous minor ones, was left to the varying character and opportunity of the local committees, and to haphazard.

Now the vote which substituted the town for the district system compelled the board of education, with the provision for continuous experience, and the exceptional opportunities involved in its organization, to search out, examine, hire, and advise all teachers, as well as look after the attendance, discipline, and general progress of the pupils. It may be remarked here that in accordance with the demand consequent upon this vote, the teachers were sought and selected, in the first instance, by a competitive public examination, sent to their respective stations in accordance with our best judgment, and advised and assisted as far as our observation suggested.

The terms the first year were made to include twenty-four weeks, so arranged as to avoid as much winter as possible, and throughout the year a careful oversight of all the schools was attempted. The result is within the knowledge of all who are practically interested, and does not need the verdict of our own judgment. The only point we desire here to call especially to mind is the peculiar way in which the constitution of the present system makes the board answerable for both teachers and pupils.

These, then, are the chief ways in which our common-school work is henceforth conditioned, as distinguished from the way in which it was originally constituted,—united ownership of and responsibility for property, the smallest possible number of educational centers, and centralized authority and responsibility for management. It is desired still further that all citizens of the school district who would make a further study of these fundamental points in our present method of administration, and more fully refresh their minds with the practical illustration of these principles, here review carefully the report of 1886.

The six weeks additional with which it was proposed to lengthen the time for instruction in all schools except the Central has this year been used, extending the entire privilege to thirty weeks, and that, as will be seen by consulting the report of the treasurer, without overrunning the appropriation. So great an advantage, widely and equally distributed, can hardly be overestimated in comparison with the meager privileges enjoyed by some of our schools in the past.

The teachers chosen last year by the principle of competitive examination, in order to make the best possible beginning, have this year been selected without recourse to this test, some of them continuing with us from last year, and the others satisfying us of their fitness in other ways. That they have as a rule been both competent and faithful, we can assert with confidence, both on the authority of our own observation and from the testimony of those in whose immediate neighborhood they have taught.

In regard to "visitations," we may say that we have followed the same general plan as last year. One or more members have undertaken to be present at least twice each term; but we are glad to find the school registers bearing witness to the fact that the zeal of the citizens generally, as regards its increase, has run before our own in this direction. It was observed in our previous report that more visitors had been welcomed at the various schools during that year than for many preceding years. This year, however, there is a very marked advance upon that. It is an exceedingly encouraging sign. Were it becoming in us we should desire to thank all these people for showing such an additional interest in the ways and means by which their children are being educated. The board will welcome at any time the criticisms which may result from their observations. May this good sign of progress increase rather than diminish year by year. Whether or not this happy state of things has resulted in any degree from the suggestion in this direction made in the previous report, we are glad that the fact has become a matter of history.

PORTSMOUTH. — Charles H. Morss, *Superintendent.*

PUPIL TEACHERS.

The day of the idea that any one can teach, especially a primary school, has gone by. Every day the importance of training the teacher before she is allowed to take independent charge of a school is more fully recognized. Spencer says, "For shoemaking or house-building, for the management of a ship or a locomotive engine, a long apprenticeship is needful. Is it, then, that the unfolding of a human being, in body and mind, is so comparatively simple a process that any one may superintend and regulate it with no preparation whatever?" This necessity of training has been recognized in Portsmouth to some extent in requiring inexperienced teachers to go about among the schools for three months, and observe the methods. There is a strong doubt in my mind whether this training is sufficient. Three months is a very short time in which to learn how to develop and train a human being for useful life. We would not think for a moment of submitting our property to a lawyer, or our bodies to a surgeon, who had had but three months' training for his profession; but we cheerfully and without hesitancy submit that part of our children, the mind, upon the proper development of which will depend all their future happiness, to the hands of an unskilled trainer, a mere tyro in the *art* of teaching, with no knowledge of the *science*. Mistakes must inevitably be made, and is it a simple thing, a matter of no importance, that a human soul is developed imperfectly?

The system of pupil teachers is not altogether a success for various reasons. There cannot be that regular and constant oversight of a skilled educator that beginners need, and that they receive in normal and training schools; neither can a definite course of study be required of them. Another objection sometimes comes from the pupil teachers themselves. Frequently they seem to regard their services as of great importance to the city, that they are doing the schools a great favor, and that the city is under obligations to them, instead of considering it a privilege to be allowed to learn something of the business of teaching without expense to themselves.

A class of pupil teachers was organized near the beginning of the autumn term, one member of which is now employed all the time as a substitute, two are still studying and attending constantly in some primary school; the rest withdrew from the class. There are no applicants to fill the vacant places. The inference from this is that our own girls, graduates of the high school, do not wish to teach, and, in case vacancies occur, we must make some other provision for filling them. If there were applicants enough, it would be a very simple matter to convert the Cabot-street school into a training school, where girls could receive the requisite instruction in teaching. The expense of supporting the school as a training school need not be so great as under the present plan. Probably more of our own graduates would apply for professional training if we had a good training school than are willing to devote their time under the present system. The pupil teachers who are now in the schools are doing faithful service, and give evidence of attaining success as teachers, but we need a larger class from which to draw our supply.

It should not be thought or expected that every one who enters such a class will be fitted for a teacher; and the fact that a girl has given three months or more to volunteer work in the schools gives her no claim on the city for a position. The board is not bound to employ every one who applies. Only ability will be considered in the selection, but, other things being equal, graduates of our own schools have the preference. But no one will for a moment expect the board to employ a woman of inferior capabilities simply because she was educated in the schools of Portsmouth. Our schools need, and should have, the very best teaching the present day affords.

EXAMINATIONS.

The chief end and aim of much of the teaching seems to be to pass examination, and great honor and prestige are accorded to the boy or girl who scores one hundred per cent. What does this signify? What is the meaning of one hundred per cent in school work? Does it mean that the pupil knows all there is to be known about the subject? Take two pupils in an examination; one receives one hundred per cent and the other seventy-five.

Does this imply that one has twenty-five per cent less intelligence than the other? In another examination this might be reversed and the perfect (?) one receive only seventy-five per cent, while the ignoramus (?) might in this case reach one hundred. A high per cent means simply that one child has had the good luck to remember certain facts which, from lack of interest or a poorer memory, the other forgot. Examinations then are lotteries in which those minds that can be crammed with the most facts draw the prizes. How often do we notice that the ignoramus, so called, develops in after life into the most successful and brilliant man of the class, and makes his mark in the world, while the pupil of *marks* is never again heard from. To attempt to grade the human mind in per cents, to estimate the comparative mental capabilities of pupils by a mathematical calculation, is an absurdity.

What our schools should aim to accomplish is not to store the memory with numerous facts about this or that subject, but to develop the reasoning powers; to train the pupil to think; to stimulate to independence of thought; in short, to make him a thinking, rational human being, that he may understand and successfully develop *himself*, and so fit himself for a useful member of society.

A school should be the world on a small scale, and success in school should be measured in the same way as success in the world, for we are endeavoring to train our pupils for successful lives. Yet in the school world and in the world of action and business, success is measured on entirely different principles.

When a boy presents himself at a school, it must be certified that he has crammed seventy-five per cent of something or other into his mind, and no matter whether he can think independently or reason logically. The one who does the best memoriter work passes, and is warmly welcomed, while he whose reason and judgment may be far superior is rejected; turned away because his memory is not equal to that of his competitor. Which one is better fitted to go out into the world and achieve success?

Such considerations lead us to believe that the marking system as practised is an unmitigated evil, and should be abolished; that is, abolished as a means of obtaining data from which to make promotions. The good judgment and recommendation of those who know intimately the work of the pupils should be substituted as the basis for promotion. The whole theory of examinations is based on the supposition that pupils are made for the schools, and not the schools for the pupils.

RICHMOND. — Charles W. Conway, Leason Martin, E. P. Merrifield.

In our first report under the town system of schools we wish to express our acknowledgment to all who have heartily assisted in making our schools a success the past year. Our new school law is under probation for five years. As citizens of a noble commonwealth, let us give it an earnest, an honest trial, and if it is not adapted to our necessities we may be assured the Legislature will set it aside.

CONSOLIDATION.

It has for many years been evident to most that the town has been working our schools to great disadvantage, because that under the district system there could not be unity in consolidating small schools. Your committee have sought to promote economy and the greatest efficiency by consolidation, as far as practicable under existing circumstances, for it is evident to any thinking mind how impossible it is to awaken interest or arouse enthusiasm in a school of only two or five little ones. Then, how many a pupil at the age of from fourteen to eighteen, in his manliness, assumed it may be, but real to himself, refuses to attend with so few or such small ones, and his parents feel they cannot afford him instruction at the academy; therefore, the most effective period of his life for study and culture is squandered, and in many cases he is trained to idleness and vice. And how impossible to find a teacher, who is ambitious for success, who will consent to take charge of such a school.

In order to know what could or should be done in uniting schools, your committee have found it necessary to visit thoroughly nearly all parts of the town to ascertain where union could be effected to advantage. This has demanded much time and expense. We have reduced the schools from twelve, including the fractional districts, to eight in the summer and seven in the fall. Uniting No. 16 with 6 and 9, Nos. 2, 3, 14, and a part of No. 4 have been well accommodated at No. 2 by carrying some scholars. The expense of carrying has been but a small part of the twenty-five per cent allowed by law to be expended for carrying scholars who live one and one half miles or more from school, the amount expended being only about six per cent. These unions have also afforded a larger average of weeks to each school. While in former years several had only from eight to thirteen, and last year the average number of weeks was less than seventeen to each school, this year it is twenty-two weeks, the same to the smaller as to the larger schools. This is a decided advantage for the smaller and outlying schools; but our citizens ought not to be satisfied with less than thirty weeks' schooling yearly for all our schools, and we should all aspire to this. Very many of the towns in Massachusetts are having thirty-six weeks or more. The eastern part of our own State has been having twenty-two to thirty-four weeks. The standard of education is constantly advancing in all parts of our country, and if our children are to stand in their business life and relations with a fair prospect of success and efficiency, they must have more and better schooling than we possess, or could have acquired with the means which were afforded us thirty years ago.

TEACHERS.

The aim and purpose was to employ only experienced teachers, if they could be procured, or beginners who had been trained in some normal school. This plan was not fully carried out in regard to the summer terms, for want of time before they should commence. This rule was effected except in the case of three beginners. All the teachers have been ladies except the one having charge of the first term in No. 6. We are decided in the opinion that if we are to have profitable schools we must have good teachers; and those who are trained for teaching, other things being equal, will the more surely succeed. There have been twelve different teachers, and each passed a good examination in the branches required by law. All entered upon their work with high commendations from former school committees, or from their instructors in normal training. We believe they have studied to apply themselves with diligence and earnestness for the greatest advantage and profit of their respective schools.

PHYSIOLOGY.

The law of the State now requires the study of this branch in every public school, to be taught to the smaller as well as studied by the more advanced students; and no teacher is entitled to a certificate to teach unless she can pass examination in the study. Dunglison's Physiology was introduced in May last, and most of our teachers have done well in presenting the study.

Reading, spelling, writing, and arithmetic have been urged upon each teacher as special studies, and good progress has generally resulted. The number of words spelled and misspelled is recorded in order to prompt each teacher and pupil to greater care in study and effort towards perfect spelling.

RINDGE. — Walton H. Aldrich, Oren F. Sawtell, Charles A. Whitney.

THE NEW SCHOOL LAW. — TRUANT LAW. — CO-OPERATION OF PARENTS.

In submitting this report to the town, we wish to call your attention especially to the working of the new school law, and the benefit the town will derive from it; to the necessity of the town adopting a truant law, and choosing officers to enforce the same; to the condition of the schoolhouses; and, most important of all, to the imperative need of the hearty co-operation of parents and teachers, and the inability of the teacher to achieve success without public opinion to encourage and uphold.

In regard to the new school law, we are certain that the longer it is in force the better it will be liked, and in this connection allow us to quote the following from the report of the schools for the year 1881–82, by the Hon. G. W. Todd. In that report he said: "By existing laws adjoining districts may change their lines, separate, divide, and reunite at pleasure, by concurrent vote. A majority of selectmen and of school committee may change lines of adjoining districts, upon petition and hearing, and also constitute new districts, or unite the whole or part of any district to an adjoining district. Would it not be for the interest of some of our small districts to unite? We think we hazard nothing by expressing the opinion that the schools of this town might have longer terms, increased number of pupils, teachers of broader and deeper understanding of the teacher's vocation, and that at less cost than now. Of course, the number of schools would be smaller."

In writing the above Mr. Todd was expressing the opinion held by a majority of the town, and this demand for a change, instead of diminishing, increased every year, and if action had not been taken by the State, the town would have abolished one or more of the school districts. It is here that one great advantage is found in the new over the law as it was before. Then, when the town abolished a district, the schoolhouse was generally sold in a short time after, and even if the number of scholars afterward increased, the district was seldom restored.

Under the new law, the town being one district, the committee have the schools taught in the different schoolhouses as the number of scholars and interests of the town demand. To illustrate this: Last summer in school No. 9 there were only five scholars, all living within less than a mile and a half of other schools. Last fall your committee visited the parents who had children to send, and found them, without exception, willing to send their scholars to the Center school. By so doing a saving of $47 was effected, as only one scholar lived beyond the mile and a half limit, and the scholars made much greater progress than they would had they attended a small school. Again, in school No. 10 there were this winter four scholars, only two of whom would have attended if a school had been kept there. As it was, they all enjoyed the same advantages as those who lived in the village. In both of these former districts, however, it is more than probable that the number of scholars will be so increased by families moving in and by those who are now too young becoming pupils, that a school will be necessary.

In regard to the truant law, we wish to call your attention to the fact that a number of scholars in this town do not attend school, and your committee is powerless in the matter. We have frequently been asked why we did not compel all children of the proper age to attend school. Our answer has been that until the town adopts a truant law we can only bring a civil action against the parents, in which case a fine of ten dollars could be imposed; but in almost every case, if not all, where parents refuse to send their children to school their circumstances are such that it would be useless to proceed against them, as no fine could be collected. We hope the town will take action in this matter, as it is of vital importance to the community, the State, and the nation, that every one should acquire at least a common-school education. The great dangers which to-day, as a nation, confront us are illiteracy and intemperance. Here we call your attention to the physiology which we have this year introduced. The cause of temperance has for the last few years made rapid strides, and in a large number of States laws have been passed making the study of physiology, with especial reference to the effects of stimulants and narcotics upon the human system, obligatory. This is the law in this State, and in conformity to it we introduced a book which was recommended by the state superintendent as suitable for the study of the above, and was reasonable in price, and have required all scholars of a suitable age to study the same.

In relation to the co-operation of parents and teachers, we feel it a duty, and it also gives us great pleasure, to extend our thanks to the parents and citizens of the town for the interest which they have taken in the schools and the efforts which they have made to have them successful. There have been but four cases during the past year of trouble between teacher and pupil, and none in which the teacher was to blame. The greatest difficulty which a teacher has to meet is the dislike of the pupil to obey the rules of the school, and in many cases the parent, instead of aiding the teacher, tacitly, if not openly, encourages them in their disobedience. In this town, however, the past year, there have been but few who would not co-operate with the teacher in her efforts to maintain proper order.

We would here quote the following from a circular issued by the interior department, Bureau of Education, by Hiram Orcutt, LL. D., in which he says: "Discipline is education. Indeed, discipline is itself the great educational process. The well disciplined alone are the well educated. Hence the great business of the teacher is to discipline his pupils. He cannot 'add to their stature one cubit,' nor to their mental or moral capacity one new power; but he can bring them under such a process of training as will subdue their wild and untamed impulses, develop the latent energies of body, mind, and soul, and direct them to a course of right action, so that the citizen and lawgiver may be fitted for his great work and high destiny."

ROLLINSFORD.—A. W. Pike, W. R. Garvin, J. D. Roberts.

CONSOLIDATION.

At the commencement of the past year we thought it inexpedient to make any changes in the plan of our schools, but that we would permit them to remain as they were until we should see some good reason that would warrant such a course. The result of that decision, so far as we have learned, has generally been satisfactory, but to continue this course for years to come, and maintain four schools where two, or three at most, are all that are necessary to accommodate our pupils, seems to us a cause for serious reflection, to see if some plan in the coming future cannot be adopted, which may be generally satisfactory, to bring our scholars into closer proximity to each other, and thus lessen the number of schools to be supported in town. We would not, however, recommend that this be done at the present time. Perhaps it would be well to wait another year, or longer, and see if there is any prospect of a change for the better which would be likely to increase the number of scholars to any considerable degree beyond the present average.

The cost of supporting a small school is no less than that of a large one. The teacher receives equal pay, and it costs an equal amount to heat a room for ten children that it does for thirty, and, besides, there is no good teacher of experience that is willing to work and devote his energies to the best interests of his pupils but would rather manage a school of thirty scholars than one of ten; and we are decidedly of the opinion that the progress made in the larger school will be fully equal to that made by the smaller one, for when there is a goodly number of pupils the teacher is stimulated to greater exertions, and there is a more wholesome rivalry among the classes, and they are thus induced to greater exertions to master their lessons and acquire a habit of correct recitation than they would ever make where the numbers are few and there is but little stimulus to wake up and give force to their latent energies.

SALEM. — Henry H. Colburn, Mathew H. Taylor, Eben B. Wells.

THOROUGHNESS. — PARENTAL CO-OPERATION.

Your board believe there has been good success in the schools the past year. While there has not been that success in every case that we desired, yet in some schools there has been marked progress, and as a whole, we believe the success will compare favorably with that of previous years.

We have encouraged the schools to be thorough and practical, rather than to go over a large part of their books for the sake of appearing to have done much work. The order in the schools has been good, with very few exceptions, and there has been permanency in instruction wherever it could be reasonably obtained, the board feeling that frequency in the change of teachers is not for the advancement of the schools. There has, we believe, been a very cordial co-operation with us and with the teachers in the discipline and work of the school-room, and your board have been gratified and helped by the cordiality and readiness with which the new order of things has been received generally by the people of the town. In conclusion we beg leave to call your attention to a few suggestions.

The benefit of the schools would be far greater if there was more punctuality in the attendance of pupils. There are far too many absences, tardinesses, and dismissals. In order that the children may get an education they must attend school faithfully. Three or four days in the week and those cut at either end will not secure much for the pupils, and the evil stops not with the delinquent pupils, but their classes in the school must be held back by them, and the whole school suffers by one or two unfaithful ones in each class. Let parents see to it that this evil of absences from any cause is remedied in the future, and the good results will soon be apparent. There is one instance of a scholar who has attended our schools for the last seven years, with no absences or dismissals, and only three tardy marks. What has been done by one can be done by many others with a little effort.

The board are of the opinion that a few of the schools have not kept as many weeks during the year as they ought in comparison with others, and this inequality should be corrected in the future.

SANBORNTON. — E. H. WRIGHT, J. N. SANBORN, O. S. SANBORN.

SURPRISING RESULTS UNDER THE NEW LAW. — TRAINED TEACHERS.

When we entered upon the duties of our office one year ago it was with the confident hope that the interests of education could be better promoted under the new (town) system than under the old (district) system. We are glad to say, after a year's experience, that our hope has been largely realized.

Under the old system school privileges in our town were very unequal. This is apparent when we look at the extremes as manifested in the least and most favored districts, Nos. 16 and 2, for while on an average for the last five years the one had only six and two thirds weeks' schooling, the other had twenty-five weeks. The average amount of schooling per year for the above time for the whole town was fifteen weeks. Under the new system for the past year we have an increased average for the whole town of eleven weeks, and have reached and surpassed the average maximum of schooling in favored No. 2, having had twenty-six weeks.

It will be said that more money was appropriated for the last year than heretofore, and this is readily conceded, but it will be remembered that under the old system board and fuel were frequently given to lengthen schooling, which would cover, in part at least, the increased appropriation. What is left after that deduction will not account for the average increase of more than a third schooling for the whole town. Must it not, therefore, be accounted for by the superiority of the new system, which admits of dropping schools where it can consistently be done, and applying the money to lengthen them at other points, thus securing a more judicious and economical expenditure of public money? (The average fifteen weeks of schooling per year, under the old law referred to above, cost an average amount of $1,415.04 for the same time. The $1,723, which under the new law has given us twenty-six weeks of schooling for the whole town, would have given under the old only about eighteen weeks. It would have required under the old law $2,452.73 to give the town twenty-six weeks of schooling, therefore that amount of schooling — twenty-six weeks — costs under the new law $729.50 less than it would under the old.)

The quality of instruction for the past year perhaps has never been excelled, if indeed it has ever been equaled. In the main, trained and experienced teachers have been employed. We found it necessary, however, as it has been found necessary in other towns, to employ some beginners. There are not enough trained and experienced teachers in New England to supply her demands. The late report of the State Superintendent of Public Instruction in Connecticut shows that of 3,038 teachers employed in her schools about 400 each year are new at the work. It is hoped the day will come when there will be more teachers who have a " working knowledge " of the branches taught in our schools.

We hail as an omen of good the increased interest manifested in our schools on the part of parents and guardians, as shown in the visits recorded in the registers for the past season.

As touching illustrative apparatus no additions have recently been made. Maps, globes, books of reference, etc., are very necessary helps in the work of instruction, and we hope the time will come when every school-room will be supplied.

SANDWICH.—Paul Wentworth, George S. Hoyt, H. H. Quimby.

A CONCLUSION BASED ON FACTS.

The school board, in making their first annual report under the town system, naturally contrast results with those attained under the district system. (We use the former numbers of the districts for convenience.) Nineteen different schools were maintained in town in 1885, and the seventeen schoolhouses were used, and also a dwelling-house and a schoolhouse in Albany. The past year eleven different schools have been maintained in twelve different schoolhouses, leaving the schoolhouses in districts Nos. 2, 5, 15, 17, and 19 unused. The schoolhouse in No. 1 is almost worthless, and the removal of the No. 2 schoolhouse to a location near the former house of the late Dr. Moses Hoyt would, in our judgment, accommodate all the scholars in the two districts. The schoolhouses in Nos. 15, 17, and 19 are not now needed for school purposes, and might be sold before they suffer further deterioration, unless it is thought that the time will soon come when they will again become useful. The scholars in Nos. 5 and 17 have been transported for the year to the Chick schoolhouse (No. 6) at an expense of one half the cost of maintaining schools in the two districts in 1885; while there have been eighteen weeks of school the past year in No. 6 as against fourteen weeks the year before in No. 5, and about six weeks in No. 17, and twenty weeks in No. 6 (where board was then given). In No. 15 (Bennett district) there were eight weeks of school in 1885 at an expense of $36; the past year, by paying $14 for transportation to the Whiteface schoolhouse (No. 9), the scholars in No. 15 have had the benefit of nineteen weeks of school. In the Currier district (No. 20), by the payment of $18 for four weeks of school and allowing Albany children to attend, our scholars have had the advantages of seventeen weeks of school. Board, if reckoned at $2 per week, was given in 1885 to the amount of $68, whereas nothing has been given the past year.

Seven different male and eight different female teachers have been employed in the public schools during the year; in the year previous, five different male and twenty-one different female teachers were employed.

The expense of all the schools in 1885 was $1,447.41; the expense for the same in 1886 has been $1,352.75; while in 1885 the average length of all the schools for the year was 12.7 weeks, and the past year 20 weeks. The incidental expenses in 1885 were $139.91; the past year they were $76.75, making a saving of $63.16; and the excess in value of wood and school utensils now on hand above what was on hand at the beginning of the year is from ten to fifteen dollars. Whereas in seven schools, two years ago, the average attendance was six or less, it will be seen by the statistical table that in the past year all such small schools have been abolished, thus inciting, by that competition and enthusiasm which arise from the association of pupils, a greater endeavor to excel both in their studies and their attendance. The average tuition fee per week for each enrolled scholar attending two weeks or more throughout town was in 1884 33 1-3 cents, in 1885 41 7-10 cents, while for the past year under the new system it has been reduced to 25 1-20 cents.

From these comparisons and from others which will readily suggest themselves to the minds of the citizens from data furnished in the statistical table and the statistical school report, and from facts within their personal knowledge and observation, it will be easy to determine the comparative merits of the two systems as applicable to this town. For ourselves, notwithstanding the fact that our population is scattered over quite a large territory, we feel constrained to say that results show the present system to be preferable here to the old one. Of course, in some individual cases, there has been a greater inconvenience in distance traveled than formerly; but this is more than offset by the general advantages secured throughout the entire town. And past and future experience can be trusted to remove whatever friction has resulted from the practical operation of the law.

Greater interest in the schools on the part of parents still continues to be a pressing need. Visit the schools when you can. See that your children go to school in season, an return home in season. Encourage and assist them in studying some at home. Find out what kind of a moral education they are getting while away from parental care. Home co-operation is the main pillar of a good school; home indifference is its chief damper.

Thanking you for the willingness you have manifested to co-operate with the board in giving the new system a fair trial, this report is respectfully submitted, together with the statistical school report, the annexed statistical table, and the following account of receipts and disbursements.

SOMERSWORTH.—J. M. DUTTON, A. A. PERKINS, ISAAC CHANDLER, NATHAN WENTWORTH, CHARLES F. BLAKE.

MUSIC.—MORE STUDY.—MORE READING.

At the last town meeting the town voted to furnish text-books for all the schools except the high school. This has removed many of the well-known troubles about text-books. Scholars are always provided with necessary books, and they are always ready for use. Contrary to the fears of many, the books are well preserved, teachers and pupils together caring for them with personal interest.

At the beginning of the winter term the prudential committee, believing that vocal music is important in life, both as a source of pleasure and profit, made arrangements to have systematic instruction given therein throughout the schools, and, having procured material for the purpose, employed Miss Ida Young as teacher.

In each school below the high school Miss Young now gives two lessons per week. The interest of pupils and the improvement of a single term satisfy us that this is a move in the right direction. Various reference books have been added to the libraries of the high and grammar schools. We think it would be of advantage if the committee were able to purchase, from time to time, books bearing upon the teacher's vocation, and thus gradually become possessed of a teacher's library.

The number of pupils in the high school is constantly increasing. The whole number in attendance is the largest for many years, and the present graduating class numbers fifteen. Two things are needed in this school. First, a second assistant, whose entire time shall be given to the work. The second need cannot be wholly supplied by either teachers or district officers, viz., more study, more hard work. This school aims to do substantially the same work as our best fitting schools and academies. These latter schools would rarely expect reputable work from pupils devoting only five or six hours per day to school purposes. In our nominal six hours per day not more than five hours are actually given to both recitation and study. To this at least two hours per day ought to be added to complete the course in the time named in a scholarly manner. Against this idea will be urged the danger of overtaxing pupils, resulting in injury to their health. Health is more important than any amount of acquired knowledge. Personally we have never known an instance in our acquaintance with high schools in which the failing health of an ordinarily robust boy or girl could be attributed to overwork, when the work performed included no more time than we have named. The danger is not from over-study, but from over nervous excitement and fatigue resulting from the multiplicity of society demands and the exhaustive recreative amusements of the time. More work will give us better results. This is only partially true in the lower grades, where the personal drill is relatively of more importance than the study of the lesson by the pupil.

Our complete course of study as now arranged requires sixteen years. A pupil entering school at five years of age and following the regular course will graduate at twenty-one. Very few follow the course in this exact way. They abridge it by private instruction outside, and thus often do two years' work in one. Here is trouble, part of it curable, and part of it incident to the best graded system. Slow progress is made in the lower primaries because of their crowded condition. From the same condition, not time enough is given to individual classes in any of the primary schools. As an illustration, the committee, visiting one room, saw a teacher assign a lesson in written arithmetic to a class, and then inform the scholars that they "must work hard, for they had only twenty minutes in which to learn their lesson." The lesson included a rule and several examples illustrative of the rule. An hour's work for a bright class, yet a very short lesson for a day's work. In another school a spelling lesson was assigned ten minutes before time for the hearing of the same lesson. The size of the classes makes inevitable a wide difference between the two extremes of the class in scholarship, and the whole class is kept at the pace of the irregular and less studious pupils. This results in lengthening the entire course.

Special studies are worthy of a moment's notice. Not enough time is given to reading. Some schools have reading but twice a week, and parents by inquiry have learned of schools in which a week was passed with a single reading exercise. Reading ought to be a daily exercise, at least. Drawing has been crowded first into a less number of days per week, and then into shorter exercises, until but forty minutes per week are allowed, and often some of this time is stolen for other purposes. So far as drawing is concerned, it is now a question whether to drop it entirely or assist it to return to its former importance in the curriculum. Commercial arithmetic has been substituted in the grammar school for algebra, and in the same school has been introduced an elementary course of composition. The present committee are in favor of changing somewhat the course in geography, omitting some parts of political and physical geography, and taking them as special studies later in the course, and thus practically finish geography in the primary schools.

SOUTH NEWMARKET. — James H. Fitts, Augustus W. Richards, Austin J. Neale.

THE TOWN SYSTEM.

The new school law of the State went into effect March 1, 1886. By it the local district system was abolished, and the town system was adopted. Notwithstanding the change, no radical difference has appeared in the practical working of our schools.

The annual school meeting was held at the town-hall March 16, 1886. H. Jenness Paul was chosen moderator, and Edward J. Beal clerk. J. H. Fitts, A. W. Richards, and A. J. Neal were elected on the school board.

The question having arisen as to whether the town or the district would be required to pay the salaries hereafter voted to the officers of said district, it was

Voted that the matter be left to the school board to ascertain.

The board are unanimous in the judgment that district officers must look to the town for the payment of their salaries.

WATER, ETC.

Could good wells of water at the school grounds be secured at a reasonable expense, they certainly would be a great convenience to the scholars, neighbors, and traveling public. Some way should be devised to keep the outbuildings on the village school grounds in a more presentable and wholesome condition. This subject should receive immediate attention.

TEACHERS.

The several schools in town opened under the care of the same teachers as at the close of the previous year. Three of the four have continued in charge of their respective schools during the entire year. Their methods of instruction and discipline, together with their eminent success in the several schools, are already matters of well-known history with us. They richly deserve our thanks and continued confidence. Teachers selected with care ought seldom to be removed. Frequent change of teachers will ruin any school.

STRAFFORD.—J. B. SMITH, G. T. FOSS, J. S. NEAL.

LAW. — TEACHERS. — PARENTS.

It becomes our duty, as your servants for the direction and promotion of the cause of education, to place before you our annual report. We have endeavored to fill the position you assigned us to the best of our abilities. How well we have succeeded we, of course, must submit to your decision. We have tried to give the new law a fair and impartial trial. Its success has more than met our expectations. We think that when the law is better understood and the schools are managed in conformity to it they will prove a success. Perfect harmony has characterized the deliberations and proceedings of the board throughout the year. The same harmony and good feeling have also prevailed between scholars, teachers, parents, and the board, so far as we are aware.

Taking the schools as a whole, we feel that marked progress has been made in the various branches taught. It is true that we cannot say, as we wish we might be able to, that every school has been all that we could have desired. The members of the board have found it necessary to criticise and advise teachers under their care, and these criticisms and this advice have been kindly received, and we trust have proved beneficial to both teachers and scholars. We might in this report present just criticisms of some of these teachers, while of others we could justly speak words of commendation, but who would be benefited by such a course? The occasions for these criticisms and comments are known to the board, a majority of which are to serve another year, and of course will be governed accordingly in their selection of teachers. Hence we withhold personal comments of teachers, either favorable or adverse. In this connection the subject of remuneration of teachers deserves attention. The best talent will go where it will be the best rewarded for its use, other things being equal. If this talent can command $1.50 or $2 per day, you cannot expect to secure it in your schools for half that sum. But you will say, "You are to blame for this, as you fixed your own prices." This is partially true, but we fixed our prices to correspond with the amount of money provided by you for us to expend. The town has generously raised $500 beyond the requirements of the law of the State for the benefit of schools, but if you want to secure the best teachers, and still have the amount of schooling you now have, you will at once see the only remedy, — raise a few more hundred dollars for school purposes, and it will be money well expended.

If many parents could better realize the expense of sustaining schools for the benefit of their children, we think more pains would be taken to have them attend more regularly. It is painful to minds at all sensitive to the educational interests of a community to see the marks of absences, tardiness, and dismissals that disfigure many of our school registers. The money is lost to every scholar who is absent from his place in the school. Parents of Strafford, we appeal to you to assist in improving our schools in this direction. It is for your interest that this improvement should be made, and it depends principally upon your efforts whether it be made or not. Will you attend to this matter as a personal work?

That something should be done, and ought to have been done years ago, in regard to some of our schoolhouses, needs no new demonstration. Take the subject into careful consideration, and do what the necessity of the case seems to demand. Our schoolhouses are sadly deficient in globes, maps, and blackboards. Any one at all familiar with the requirements of a school-room knows what disadvantages a teacher labors under when deprived of the benefits of these helps. No teacher can do justice to himself or herself, or to his or her scholars, who is deprived of the privilege of availing themselves of these helps, or who does not use them when availed.

SULLIVAN. — Mason A. Nims, Henry C. Rawson, Rosabelle S. Rugg.

A GOOD RECORD.

In presenting this our first annual report, we believe it just to acknowledge a liberal share of the three requisites essential to good schools, — a reasonable people, good schoolhouses, and competent teachers.

The usually active interest on the part of parents to co-operate with the teachers has been of great service in securing punctuality, constant attendance, and obedience from the pupils. The teachers required of their pupils prompt and regular attendance. Could this be accomplished without the aid of the parents? When our schools are ruined by irregular attendance, it is generally conceded that the responsibility rests largely upon the parents, so in case of a prosperous school resulting from prompt and regular attendance, credit is due the parents to the same degree. Of the eighty-four enrolled pupils fifty-one have been neither absent or tardy during a whole term, and thirty have escaped a mark for the entire year. Last year the percentage of daily attendance was eighty-seven. This record is better than was attained by any other town in our county. The present year it falls to eighty-three nearly, caused by scholars coming into school late in the term and other non-membership absences, principally. For the efforts made to acquire this good record we are grateful, but hope in the coming year to be able to report a better record than ever before.

It is the law of the universe that great things shall be made up of littles. The same rule is equally true of common schools. It is by making a little gain in knowledge each day, by correcting little errors as they occur, by overcoming little obstacles, until each day is a little nearer perfect than the preceding one, that we are able to note the progress made from term to term. Sometimes there is so little improvement made in the amount written in the copy-books in one term it is hardly noticeable, but frequently in a year there will be a very decided change in the handwriting. Unusual pains have been taken in penmanship in some of our schools, with good results. To learn to call words correctly is not accepted for good reading by our best teachers. Most of our reading classes read understandingly, and are able to explain the lesson in their own words.

SUNAPEE.—George H. Bartlett, Edwin P. Stickney, 2d, John M. Cooper.

HOW THE LAW WORKS.—REPAIRS.

In submitting to you our report of the schools for the past year, we feel it to be a duty we owe you to clearly and fully state not only the present condition of the schools in town, but also the progress made in the same during the past year as compared with that made during the preceding year. In attempting to superintend the schools for the past year we found ourselves strangers in a strange land. To us, as to you, the law was new, and, being new, the execution of it was a matter of experiment. When assuming the onerous task of carrying out the new law we did not expect to do it to the satisfaction of all. That would have been impossible. We did, however, endeavor to do the best we could by the scholars as a whole and get the greatest benefits from the money. We did not in all cases agree upon the same method of obtaining the greatest benefits, and as a consequence there were not in all cases the same number of weeks in each school. We were enabled to so arrange the terms of school that the scholars from one school might, with a little extra travel, enjoy nearly the same amount of schooling that scholars in other schools enjoyed. Some scholars took advantage of these opportunities of enjoying more and oftentimes better instruction than they had usually had in their own schools; others would not when they could. If parents persist in keeping their children from attending school in an adjoining school because they have already sent their children to their own schools the number of weeks required by law, on whose shoulders in after years will the children cast the blame? As far as possible the same teachers have been retained in the same school for the year. This we believe to be advantageous, even if it costs a little more. It is not so much two or three extra weeks of school as the amount of work done during the term which tells. Who is so well able to do the best work in a school as a good teacher who has had the care of the school for a term or two, and knows the capabilities and wants of the scholars? There have not been so many weeks of school during the past year as during the preceding year, because of the extra amount paid for board.

Taken together, the schools have been much benefited by the new law. These benefits have not been so equally distributed as they may be during the next year, now that it is known by our year's experience where they are most necessary. Nos. 2, 8, and 9 have been graded. Under the old law there were, in Nos. 2, 8, and 9, scholars of all ages and grades. Now the more advanced scholars are in a grammar school, and the less advanced in two primary schools. Then there were from twenty-five to thirty-five classes per day in each of these schools, now there are from twelve to thirteen. Then a teacher could give ten minutes to a class, now she can give thirty minutes. Now scholars can study the higher branches in their own town. Nos. 2 and 8 have contributed sixty dollars to the support of other schools, yet notwithstanding this loss they are more than repaid by the change in their schools. During the year No. 8 has received scholars from Nos. 1, 2, 4, 7, and 9, gratis. There has been very little discord in the schools the past year, and an unusual interest has been taken in the school work, both by teachers and pupils.

We wish to call the attention of our townsmen to the condition of the schoolhouses. Several of them need repairing to preserve their value, while others are hardly worth repairing. Repairs are needed in Nos. 1, 3, 5, 6, 7, and 9, in order to preserve the value of the buildings. Is it judicious management to allow the schoolhouses, the town's property, to become damaged by the elements, when a few dollars will prevent it? Let us endeavor to have schoolhouses of which our scholars shall not be ashamed, teachers who are worthy the name, and each citizen, whether sending scholars or not, lend a helping hand for the improvement of our common schools.

SUTTON. — Cyrus French, Benjamin Johnson, Cyrus H. Little.

GENERAL REMARKS. — JUDGMENT OF THE NEW LAW.

There have been two hundred and thirteen weeks of school in town the past year. The number of schools has been reduced from twelve to nine. Seven of these have each had twenty-six weeks of school with the exception of the Eaton school, where the winter term closed one week earlier than we intended. The other two, which are very small, and where the houses are not suitable for winter schools, have each had sixteen weeks, and the scholars have had the privilege of going to adjoining schools to complete the twenty-six weeks. It has been our aim to give all scholars as nearly equal privileges as seemed practicable.

We would ask especial attention of parents to the difference between the number of pupils enrolled and the average daily attendance, as shown by our table of statistics. About twenty — one eighth of the number of scholars in town — are absent every school day. The remedy for this great injury of irregular attendance is mostly if not entirely within the control of parents, and there is no reasonable sacrifice that a parent should not willingly make in order to secure to his children the actual benefits of a common-school education, for it is well understood that this is the surest passport to position, influence, and success in life. Our school advantages ought to be appreciated by every parent, but there are those who become indifferent and unconcerned in regard to this matter, and hinder the progress of their children by allowing occasional absences, and sometimes by withdrawal from school before the close of the term for no good reason. We earnestly and sincerely ask the co-operation of parents and citizens in our efforts to extend to every child in town the full benefit of the instruction offered by our public schools. You certainly can undertake no other duty of so much importance, not only to your children, but to our town and State.

Although we have not succeeded in bringing the schools to our standard, and there are doubtless many chances for improvement, yet as we review the work of the year we feel that progress has been made. Having had some experience in managing the schools of this town under the district system, we do not hesitate to state that in our opinion the town system is much to be preferred. Instead of schools varying in length from eight to thirty weeks, as in previous years, every scholar has had the privilege of attending twenty-six weeks. It has been our aim to have the work of this year prepare the way for other changes in the near future.

SWANZEY. — George I. Cutler, Alonzo A. Ware, Benjamin Read.

ATTENDANCE OF SCHOLARS.

A few have been kept out of school to work, and others because some appear to think that one or two short terms are enough for the year.

We would refer parents and guardians, also agents and owners of manufacturing establishments, to the laws of the State respecting the attendance of scholars at school.

The laws direct that children between the ages of eight and fourteen years shall have at least twelve weeks of schooling in every year, unless excused from such attendance on account of mental or physical condition.

The law provides that no child under sixteen years shall be employed in any manufacturing establishment unless he has attended school at least twelve weeks during the year preceding, and can write legibly and read fluently; and also that no child under the age of fourteen years shall be employed in any such establishment unless he has attended school at least six months during the year preceding; and no child under twelve years shall be so employed unless he has attended school where he dwelt the whole time it was kept during the preceding year.

Our business men who have an interest in the welfare and education of our young people have declined to employ such children in their shops and mills while school was in session.

We have had during the year but few cases of truancy. Our village schools have been troubled with it less than we have known before, which is owing much, perhaps, to the extra vigilance of the teachers.

DEPORTMENT.

Although we have had excellent schools, with an average as good as we have been accustomed to see, yet the conduct of some scholars has been far from exemplary, and has had a tendency to mar the harmony of school.

Teachers who have had such scholars to deal with have necessarily labored under disadvantages, because they have had to take so much time in governing.

As a rule, schools have proved the most prosperous where the most public and parental interest has been manifested in them. It cannot be expected that scholars who cannot be managed at home, and who, perhaps, are permitted to run at large and do as they choose without restraint, will always observe the best deportment at school; but it is encouraging that this class generally do better at school in charge of the right teacher than anywhere else. Most of our teachers' difficulties would be removed if they could have the co-operation of parents, and they would visit school often. It is their duty to know how those whom they send there improve their time. They should not accept the reports of others concerning school without visiting it and observing the teachers' methods of instruction and management. Reports of disaffected ones should be received with caution before passing judgment upon a school.

In conclusion, if we would have good schools and make them more efficient for the education of the rising generation, we must have good teachers, and those teachers must have the necessary aid, support, and encouragement in their work.

WAKEFIELD. — Morrill B. Smith, John G. Sanborn.

THE NEW LAW. — MORE MONEY. — TEXT-BOOKS.

In entering upon the duties of the office, the members of your school board were fully aware, as every reasonable person must have been, that they were entering upon new and untrodden paths under the untried school law, and that perplexities and obstacles were expected to be met with at every turn and change. These expectations have been, to some extent, realized, though they are happy to say no serious or obstinate opposition has been encountered. As was anticipated, there was found in every part of the town more or less opposition to the new school law which requires such radical changes in the administration of our schools; but, generally, the good citizens of the town, though they may not fully acquiesce in, yet quietly submit to the demands of the law, and await the results of the workings of the school system under it. That important changes in our school laws were needed has been abundantly proved. More than one third of all the school districts in the State furnished not more than twelve scholars each, and more than one eighth of the whole number not over four to six scholars each, while one district in Grafton county had no school for fourteen consecutive years for want of children to educate, and the money belonging to it accumulated all these years, and still remains unexpended. Many other nearly parallel cases can be cited nearer home. That some modification of the new law is needed, no one will deny; but before it is denounced or condemned it should be given a fair trial. The district system was well adapted to meet the wants of the schools at the time it was established, and probably no better means could have been devised at that time. Our fathers were wise in their day and generation, but the world moves on, and as it moves it brings about changes in the conditions and phases of all the departments of life, and hence corresponding changes are required in the administration of life's affairs—and in none more so than in the conduct of our common schools. "Other times bring other needs." It takes time and effort to overcome the prejudices and obliterate the old landmarks of antiquity, to make way for the advanced ideas of education and training. We must keep step with the music in the march of time, or "get left."

At the commencement of the year it was made unpleasantly evident to the school board that their efforts would be crippled for want of funds to carry on the schools with success. A reduction of the school fund from

$2,744.22 for the previous year, to $1,375.05 for the past year, left but meager means to work with. How to parcel this out among the different schools, in the wages of teachers, purchase of fuel, transportation of scholars, necessary repairs of schoolhouses and other incidental expenses, so as to obtain satisfactory results in the education of our youth, was a problem difficult to solve. It was seen that some change in the management of our schools was imperatively demanded. The registers for the previous year recorded four as the largest number that attended school in District No. 4, while the average in No. 10 for the last term was only two, and the whole number during the year was six. These two schools were discontinued, and provision made for the scholars in other schools.

Districts No. 6 and No. 11 were united for school purposes, the first term being held in the schoolhouse in No. 6, and the second term in the schoolhouse in No. 11. Thus the number of schools was reduced from twelve to nine. From the decrease in the number of scholars in some schools since the close of the terms, by removals from town and other causes, further reduction will become necessary the ensuing year. It would be far better and cheaper to furnish private instruction for such children as cannot otherwise be accommodated than to attempt to run schools with only three or four scholars.

Board, or transportation to and from school, has been provided for most of the children who would have been subjected to much inconvenience or hardship by the changes that have been made, and parents who have neglected to take advantage of this provision will find such neglect attended with great loss to their children.

Instead of uniformity, great diversity of text-books exists. In several schools there is a variety of text-books on the same subjects. This is detrimental to proper advancement, and calls for speedy correction. It was thought best, for prudential reasons, to make but few changes in school books the past year. Smith's Physiology and Hygiene, prepared with special reference to the effect of alcoholic drinks, stimulants, and narcotics upon the human system, has been directed to be used; and hereafter no other text-books on this subject will be recognized for five years, at least. Parents and others, in purchasing, will do well to keep this in mind. Smith's Primary Physiology and Hygiene is deemed best suited to the capacities of children between ten and fourteen years of age. This book can be obtained by applying to the school board.

WALPOLE. — Bolivar Lovell, Albert F. Nims, Lucius Wellington.

RE-ARRANGEMENTS. — REGULAR ATTENDANCE.

Upon assuming the duties of our office we found that to adjust the new system to meet present conditions and give equal privileges to all the scholars would be a matter of no little difficulty should we attempt many changes in the location of the schools, for while there would be an undoubted advantage in some cases in bringing two or more schools together, there would be a manifest injustice in compelling the scholars of another school to travel a long distance before finding themselves in possession of privileges equal to those enjoyed by scholars living in more favored localities; while, on the other hand, we were not unmindful of the fact that as the school year was to be of equal length in all the schools, that course would best subserve the interests of all which gave as few schools as would be consistent with a wise economy and the comfort of the scholars. Upon looking the field carefully over, we found that with little or no inconvenience to scholars and at a saving of about fifty per cent, the Derry Hill school could be well convened in an adjoining district, and accordingly made that change. The school in old district No. 13 has been discontinued for want of proper school-room accommodations. Other than these we have made no changes, excepting in school No. 12, where the scholars were transferred to No. 11 for nine weeks.

In the period included in this report there were thirteen schools in session, each school having the same number of weeks' schooling; namely, twenty-six weeks, being about two weeks less schooling than the average of the schools for the year preceding, occasioned in part at least by the different mode of dividing the school money under the vote at the last annual town-meeting, to which subject the board respectfully call the attention of voters.

The school board have intended to employ only thoroughly competent teachers, specially qualified in point of aptness for the particular school they were to teach. The work of the teachers in all the different schools has been in the main well done, the discipline fair, and the results generally satisfactory to the board.

One of the greatest promoters of order and successful progress in our schools is regular attendance. Parents are largely responsible for lack of punctual attendance on the part of their children. They are generally desirous that their children should be regular in attendance and observe the rules of school, but many, through indifference and lack of thought upon the subject, omit largely that which the best teacher cannot supply. It is of the greatest importance that parents be watchful, and that the best habits and impulses be fostered at home.

WARNER. — SAMUEL W. COLBY, LEMUEL W. COLLINS, EDMUND C. COLE. SAMUEL DAVIS, *Superintendent of High School.*

GOING SLOW. — DRAWING. — HIGHER EDUCATION.

In presenting to you the first annual report of the school board under the new dispensation, we ask you to consider the manifold disadvantages under which we have labored on account of the extreme unpopularity of the law, which, while it clothed us with arbitrary power, was viewed by many with distrust and disapprobation. Thus peculiarly situated, we deemed it advisable to "go slow" at the start. Wherever it was practicable, without causing too much friction, we united the smaller schools for the spring term; in five instances putting two in one, and in one instance putting three in one, thereby reducing the number from twenty-two to fifteen.

Upon the whole, we are of opinion that some good has been accomplished the past year without imposing very severe hardship on any, and when all antagonistic feelings engendered by the arbitrary features of the law shall have been toned down and smoothed off by contact, and when the law itself shall have been so modified as to be no longer objectionable, more beneficial results may be realized.

One branch of instruction, which has been too much overlooked and neglected in many of our high schools, has been introduced with good effect. I refer to drawing. The representation of the appearance or figures of objects on a plane surface by means of lines and shades, as with a pencil, crayon, pen, compasses, etc., is an art as well as music, and, perhaps, not inferior to it. For according to Addison, "our sight is the most perfect and most delightful of all our senses." Lucretia E. Manahan, first assistant of the Manchester High School, lately very truly said: "History tells us that the more cultivated and intellectual a people become the more attention is paid to drawing and the more it is elevated." She showed, also, even from a practical point of view, that drawing had a direct monetary value in it. Irving, the great, popular teacher of the youth of our century, said: "In America literature and the elegant arts must grow up side by side with the coarse plants of daily necessity." I have long sought to bring this desirable accomplishment to the front, but with indifferent success. Now that we have an assistant who is proficient in the art, let us utilize the opportunity.

By referring to the list of the alumni, I find that more ladies graduate than gentlemen. From 1873 to 1886 inclusive, the total number of graduates is thirty-six. Ladies, twenty; gentlemen, sixteen. In 1885 three ladies graduated and no gentlemen; in 1886, four ladies and one gentleman. Without going into an extended discussion of this matter here, it is certainly to be desired that our young men might show as ardent an appreciation of the value of a higher education as the young ladies. But, if we are to judge by the record, they do not. What is the cause? Of course it is not to be found in inferiority of intellect, or less ambition, nor are we to presume that their thirst for education is less pressing. Now, I think there are three things which, to a very great extent, account for this lamentable anomaly. First, the worldly circumstances of parents; second, the manifold opportunities offered to boys at an early age to earn, if not a livelihood, a considerable amount of pocket-money; third, the worship of the self-made man. But an enlightened understanding of the duties of parents to the State and their children will give them to see that their worldly circumstances must be extremely low to justify them in withdrawing their boys from school for the sake of their personal services and earnings, especially when they evince an aptitude and desire for a higher education. The boy who is inclined to succumb to the temptation of supplying his purse with that ephemeral substance denominated pocket-money, in preference to storing his mind with knowledge, should, at least, be held in check until he sees his error and can give a better reason for his course. To be sure, the plaudits of the self-made man are heard everywhere, and they are very fascinating to our youth; but they cannot too early learn that it will be found that the self-made man — properly so called — rarely neglected the opportunities of his youth. The self-made man is generally preceded by the self-made boy.

WARREN. — Frank C. Clement, James M. Harriman, Amos L. Merrill.

GENERAL REMARKS.

The school board has endeavored to run the schools at such "places and times" as should "give all the scholars of the town as nearly equal advantages as may be practicable," in accordance with the new law. We have given about all the scholars of the town an opportunity to attend three terms of school, except on Ore Hill and Swain Hill, but they have been given more than double the amount of schooling received last year. Last year, Ore Hill, Swain Hill, the Summit, No. 10, and No. 3, containing seventy-nine scholars according to the school report (over half of those in town), had, practically, one term only. There was one exception; No. 3 had about $31 of back money, which, taken together with the unusual amount of lumber taxed there, gave them more than the single term of ordinary years.

In our judgment, medium-sized schools not less than ten weeks in length are of the most profit under the conditions which obtain here.

We made a contract with the Benton school board, on the same basis as they made with the Haverhill board, to receive their scholars, stated to be somewhere from seven to ten in number, at $4 each for the school year. There proved to be seventeen in all.

The first thing is to secure the best teachers possible, and next for the parents to have their children attend school regularly. You have paid your money; have your children reap the full benefit of it when possible, for if they do not, the loss to them is irretrievable. We wish that parents could fully realize this. The habit alone,—viewing the matter in a business light,—of steady application is of untold value to the pupil, when his health will permit. In some schools the absences have been unavoidable by reason of sickness. Many teachers complain, and with reason, that they cannot make their classes show the progress and thoroughness on review that they could if the attendance had been regular.

There is one point about the new school law that corrects what was before an injustice. If it happened that A, B, C, and D, owning a large amount of property, lived within one particular district (usually by the village), though perhaps having no scholars to send, their school taxes usually went to that district; whereas now it goes for the benefit of all the scholars of the town in giving them equal chances.

WEBSTER.—George Little, Friend F. Fisk, James L. Colby.

FOOD FOR THOUGHT.

We would call your attention to the steady decrease in the population of Webster. Its effect upon our industries is already shown. If it is continued without abatement, we do not like to contemplate the consequences. We have a floating population in this country,—not that popularly known as "tramps," but that which, upon the flood of emigration, made Chicago, St. Paul, Minneapolis, and has sent to us from the plains fat beeves instead of the skins of wild animals. They are people who love their country, and have made it to take the place it does among the nations of the earth. They are not like some of us who are left here, rooted to the soil almost as firmly as the trees, but they have always been ready with their intelligence and energy to build up, wherever they might be, new industries, and give life and activity to the place. Such men have gone from Webster. We miss them. Not all obeyed the injunction of the sage, "Go West, young man!" for many sons of Webster may be found in such places as Franklin, Concord, Manchester, and other manufacturing towns. Why are they there?

If you would listen to some of the tax-payers in Concord, for instance,—men who do nothing to build up the place but pay their taxes,—you might hear them complaining of the people who are crowding their city for no other purpose than to educate their children. "We have spent too much money on our schools," they say, "and now these people are going to have the benefit without cost to themselves." Who are the men who go there for that purpose (if we give credence to the complaint) but men who did not feel able to send their children away to school, but realized the importance of an education! Why did Franklin raise its school revenue from less than $4,000—the amount required by law—to more than $9,000? Was it simply to benefit those who might go into the town for school purposes, or did they think that an accession of intelligent workingmen with families was what they needed to give activity to their industries? Were they less liable to strikes and labor troubles when their operatives were men who were not there for the monthly pay alone, but for school privileges also? Was that the only inducement the people of Franklin might have to tax themselves voluntarily for the support of their schools? They hoped to make their industries permanent, and that the sons and daughters of their employés would in the near future take their places in the factory and counting-room.

Walker, in discussing labor, says: "The intelligent is more useful than the unintelligent laborer, (*a*) because he requires a far shorter apprenticeship, — he can learn his trade in a half, a third, or a quarter of the time which the other requires; (*b*) because he can do his work with little or no superintendence, — he is able to carry instructions in his mind, and to apply them with discretion to the varying conditions of his work; (*c*) because he is less wasteful of materials; (*d*) because he readily learns to use machinery, however delicate or intricate. It is only the intelligent workman who can freely avail himself of this great help. Brains are not alone required for the invention of machines; they are required for their adjustment, their ordinary use, and their occasional repair." — *Political Economy.*

The people of Franklin have various reasons for taxing themselves for schools that are not found in a purely agricultural town. For such reasons, the class of people upon whom the life of a community depends, — viz., the working class, — will be found drifting from those towns that for reasons cannot give them school privileges to those where they can have them. All are not desirous of leaving a steady agricultural community for the village or city, but feel driven to do it from necessity.

We are not asking you to raise money to make our schools like the Franklin schools, but we do ask you to think of the inevitable results of a much longer wasting of our people.

WILMOT.—Julius B. Hale, John M. Carr, Minot Stearns.

COMMON SENSE.

At the commencement of the school year there was much feeling against the adoption of the town system of schools. This feeling was carried to such an extent that the educational interests of the town were sadly neglected. By this we mean the refusal of the citizens to provide suitable funds for school purposes. It may be true that there are objectionable features in the present school law, but we sincerely hope that our people will realize hereafter that the remedy does not lie in sacrificing our own interests. There are points in the new system which, if allowed to be carried out, a majority of the people must admit will be superior to the old. We hope the voters will study the matter, and say at the school meeting whether they are satisfied with the course they indirectly marked out, or whether they prefer some change. We have spoken of some of the disadvantages under which our schools have labored the past year, but the great disadvantage yet remains to be considered—the pleasure (?) some parents take in opposing and finding fault with the teacher, and upholding their children in doing the same. It is true that all teachers are not so much interested in their work as they should be, but there is a chance for any scholar to learn something at any school if he so intends.

The best scholar is not the one as a rule who complains of the school. When we see the parents take an interest in a school we are almost sure of a good one, but where they oppose we cannot expect to see much done.

WILTON. — George E. Bales, Sarah E. Dunbar, Philander Ring.

THE NEW LAW.

The Legislature of 1885 passed a school law which effected a radical change in the management of our educational institutions. The district system was superseded by the establishment of the town system, subject to the direction and control of a board of education. Perhaps in this connection it would not be deemed extrinsic to advert in passing to the effect of this legislation upon our schools. While we would not usurp the prerogative, which is clearly yours, of judging as to the results of the application of the law in our town, yet a brief survey of the situation may prove of interest.

Aware of the fact that many looked with distrust upon the new departure, and believing that a conservative course would best tend to promote the general welfare of the schools, we avoided so far as practicable any serious deviation from existing methods.

An early inspection of the schools revealed a condition of affairs in the main satisfactory, except that, embarrassed by the lack of sufficient funds, several schools suffered somewhat in comparison with those more fortunate in this respect. Herein appears one of the generally acknowledged advantages of the new system, viz., less inequality in the distribution of the money available for school purposes.

Although the law may in certain cases work hardship, particularly in localities furnishing a limited number of scholars, we believe that, selfishness aside, if the law is administered in a spirit of justice to all, it will commend itself to all reasonable men.

It has been the custom in preceding years to give a more or less extended account of each school, but from a firmly established doubt as to the utility of such a course we shall ask your attention to some general observations applicable to the schools as a whole.

TEACHERS.

Teachers are not infallible. Some, having a good conception of the requirements for a successful teacher, come to their work well equipped,—not with book learning alone, for that teacher who has nothing additional has a small stock of wares, and will soon be distanced in the march of improvement. The acquisition of knowledge is one thing, while its communication is quite another. Others engage in teaching as a matter of convenience. Having little interest in their occupation, they fail to inspire that interest and zeal among their scholars which are productive of so much benefit. But supposing we have teachers of both classes employed in our schools, what advantage is to be gained in extolling the one and condemning the other in a public manner? Collectively considered our teachers have been competent, earnest, and faithful. Without an exception they had had experience, which enabled them to adapt themselves readily to their work.

The most successful teachers are those who have communicated to their pupils valuable information of a practical nature aside from that contained in the text-books. The dry routine of mere book questions with book answers has a tendency to give the young a distaste for school at the very outset. The teacher should study to understand each child individually, and develop so far as possible the talents which each possesses. The satisfaction with which our teachers have been received by those immediately interested in the various schools is the criterion for your judgment.

SCHOLARS.

As yet no royal road to knowledge has been discovered. Continued application, thought, and reasoning are essential to mental development. The acquisition of learning is purchased oftentimes at an immense outlay of time and energy, yet, once attained, it continues as a source of gratification to the possessor.

While teachers are employed to direct the scholars to intelligent and effective methods of study, that one who reaches the goal of a worthy ambition must accomplish it through the exercise of his own abilities. With regard to deportment, the general conduct of the scholars throughout the town has been praiseworthy. Though exceptions have occurred which are deeply regretted, we believe that the general improvement is indicative of a healthier sentiment among the young people of the town, which is commendable. Diligence and order are prime factors in the make-up of a successful school. These requisites the scholars can supply.

PARENTAL VISITATION.

Why is it that in the business affairs of life every man, by personal investigation from time to time, will ascertain what his agents are doing, while in the far more important interests of education he is content to delegate his authority to another almost unquestioned? In the one case dollars and cents are concerned; in the other the welfare of a human soul is involved. Parents are too indifferent to the well-being of their children in this respect.

We take this opportunity to extend an invitation to all interested in school affairs — and who is not? — to make frequent inspection of the schools, that you may be better conversant with their condition and needs, and at the same time exhibit to your children the interest which you must feel in their work; for the boys of to-day are the men of to-morrow, and it is presumed that you desire that the affairs of state and nation be committed to worthy hands.

WINCHESTER. — S. M. MORSE, *for the Board.*

CARRYING TO SCHOOL. — COMPULSORY ATTENDANCE.

In making our annual report to the town as required by law we have given a brief detailed report of each school which we hope will show the condition and progress of the different schools during the year. We are satisfied that on the whole the town system has already done a good work in promoting the efficiency of our schools. We are confident that the opposition which at first made it difficult to give the new system a fair trial, in some schools, is fast yielding as the results are better known. We are not blind to the fact that some defects have been developed in carrying into effect the provisions of the law, but we think the most of the faults can be attributed to errors in administration rather than to the system. For the benefit of our successors, and that they may avoid our errors, it may be well for us to call attention to a few points wherein we have erred.

Understanding the law as giving the school board the power of appropriating a portion of the school money for the purpose of carrying the scholars to and from school when living more than one and one half miles distant from the schoolhouse, and desiring to conciliate in some measure those that felt aggrieved by being consolidated with another district, we offered to furnish free transportation in some cases. On this fact becoming known, there came demands from other sections where no changes had been made, and the subject promises to develop into a nuisance unless a remedy is found. We do not wish to be understood as condemning the principle, which we believe is founded in justice and equity, but in carrying it into practice we think we have been too generous, and thereby have wronged the majority who do not come within the provisions of the law. It is manifestly an injustice that one family living a few rods more than one and one half miles from school should have full pay for carrying their children to school, while another family living a few rods short of that distance should have nothing; the law is doubtless intended to equalize the burdens, and not to remove them altogether from a favored few and leave them in full force on the remainder. We are satisfied that in some cases we have paid too much for this purpose, and that our action ought not to establish a precedent for the guidance of our successors.

The schools outside of the villages are receiving much more benefit from the change in the system than those in the villages. This is right and proper, because under the district system they were at a disadvantage; but now that they are having as much schooling as the villages, and in many cases as good teachers, it may fairly be asked that the residents be modest in their demands upon the common purse for carrying the children to school.

Having long felt that the law in regard to compelling the attendance of scholars at school was deliberately and intentionally violated, especially in the Ashuelot villages, we have made during the past season an earnest effort for reform in the matter. We are sorry to be obliged to report that our success has been only partial. We gave notice to the mill-owners at Ashuelot who were employing a large number of children of school age that we intended to enforce the law. Some of them promised to conform to the law; others asked that time be granted them to look up other help to take the places of those who were to be sent to school. In a few cases children were discharged for a time and entered the schools, but complaints were continually coming from the teachers that the scholars were irregular in their attendance, being enticed out by the mill agents.

Finally the mill-owners asked permission to establish an evening school at their own expense for those scholars between the ages of fourteen and sixteen, and that such scholars as attended the evening school be allowed to work in the mills during the day. To this proposition we finally gave a reluctant consent that they should try the experiment, but at the same time expressing our convictions that it would be a lame substitute for the day school. The school was put in charge of Miss Emma Pickering, and for a while seemed quite prosperous; but for some reason the teacher, the scholars, and the backers of the school soon seemed to lose their interest, and after a lingering existence of a few weeks it died, and probably no more will ever be heard of an evening school at Ashuelot.

Our conclusion upon the whole matter is, that for the future good of the whole community the law ought to be strictly enforced, but that it is a thankless task to enforce it in a community where employers, parents, children, and an almost unanimous public sentiment are against such action. A place where the people have no interest in children farther than making what money they can from their employment has in prospect a very unenviable future.

STATISTICAL TABLES.

STATISTICS.

The returns from school committees are grouped under the following heads:

1. Districts and schools.
2. Schoolhouses.
3. Scholars.
4. Teachers.
5. Revenues.
6. Expenses.

TABLE

BELKNAP

SCHOOLS.

	TOWNS.	Legally organized school districts.	Different public schools.	Graded schools.	District and town high schools.	Schools averaging twelve scholars or less.	Schools averaging six or less.	Average length of schools in weeks.
1	Alton	1	15	2	..	7	2	16.00
2	Barnstead	1	13	..	..	6	4	17.58
3	Belmont	1	8	1	..	3	..	20.00
4	Center Harbor	1	4	..	..	..	..	20.00
5	Gilford	2	16	9	1	7	1	24.00
6	Gilmanton	1	18	..	..	5	..	13.50
7	Laconia	2	10	10	1	10	..	27.73
8	Meredith	2	17	1	1	5	..	18.23
9	New Hampton	1	9	..	..	5	..	19.00
10	Sanbornton	1	12	..	..	5	2	26.00
11	Tilton	1	9	..	..	1	1	24.00
	Totals	15	134	23	3	55	10	20.92

No. I.

COUNTY.

SCHOOLHOUSES.

	Number of school-houses.	Unfit for use.	Built during the year.	Having maps or globes.	Estimated value of school buildings, furniture, and sites.	Estimated value of apparatus.
1	18	4	..	15	$5,851.00	$125.00
2	15	3	..	1	2,660.00	25.00
3	12	1	..	2	3,001.00	25.00
4	5	1	1	2	2,395.00	8.00
5	16	..	1	7	16,500.00	700.00
6	18	2	..	5	4,682.00	100.00
7	6	..	1	3	37,000.00	25.00
8	14	..	..	10	7,000.00	120.00
9	10	6	..	4	3,370.63	....
10	14	..	..	14	5,925.00	200.00
11	5	..	..	4	2,500.00	35.00
	133	17	3	68	$90,884.63	$1,363.00

BELKNAP

SCHOLARS.

	TOWNS.	Selectmen's enumeration between five and fifteen.		Number of boys enrolled.	Number of girls enrolled.	Under six years.	Between six and sixteen.	Over sixteen years.	Average daily attendance.	Number pursuing higher branches.	Number reported between five and fifteen not attending any school.
		Boys	Girls								
1	Alton..........	113	103	129	101	13	200	17	206	47	2
2	Barnstead......	..	..	123	87	14	167	29	163	50	..
3	Belmont........	84	82	98	88	12	167	7	133	12	2
4	Center Harbor.	..	..	51	33	5	69	10	63	15	2
5	Gilford.........	..	..	318	242	38	171	51	383	27	8
6	Gilmanton.....	97	97	144	121	22	214	29	229	72	..
7	Laconia........	..	..	283	282	37	467	42	392	62	2
8	Meredith.......	..	..	191	169	26	301	33	290	95	2
9	New Hampton.	94	86	100	96	16	175	5	132	..	..
10	Sanbornton....	..	..	131	89	17	167	36	221	..	..
11	Tilton..........	103	77	112	90	12	185	5	71	19	..
	Totals.......	491	445	1,680	1,398	212	2,283	264	2,283	399	18

COUNTY.

TEACHERS.

	Number of different male teachers employed.	Average wages of male teachers per month.	Number of different female teachers employed.	Average wages of female teachers per month.	Number teaching the first time.	Number teaching the same school more than one term.	Number of teachers from normal schools.
1	2	$40.00	18	$22.00	3	10	2
2	..	......	17	23.12	3	12	..
3	1	24.00	11	23.00	1	3	2
4	..	......	5	21.75	..	2	2
5	1	65.00	19	33.00	2	10	2
6	2	29.50	17	19.64	5	7	..
7	2	64.00	14	40.00	..	13	5
8	2	38.00	19	26.00	3	8	5
9	1	20.00	8	22.12	..	8	1
10	3	24.00	20	20.69	4	8	3
11	1	......	18	24.50	..	1	3
	15	$38.06	156	$25.08	21	82	25

BELKNAP

REVENUE.

	TOWNS.	Amount raised by town tax for support of schools.	Amount raised by district tax for schools.	Literary fund.	Local funds and dog tax.	Railroad tax.	Contributed.	Entire amount of revenue.
1	Alton..........	$1,560.50	....	$153.11	......	$150.00	......	$1,863.61
2	Barnstead.....	1,200.00	....	140.30	$154.50	......	......	1,494.80
3	Belmont.......	997.50	....	122.61	30.00	......	......	1,150.11
4	Center Harbor	401.26	....	46.72	......	......	......	447.98
5	Gilford	1,740.00	$8,850.00	219.48	......	......	......	10,809.48
6	Gilmanton....	1,000.00	....	178.12	104.00	......	$16.00	1,298.12
7	Laconia.......	9,179.50	....	333.67	250.00	......	......	9,763.17
8	Meredith.......	2,094.50	400.00	235.52	50.00	......	......	2,780.02
9	New Hampton	947.50	....	109.80	......	......	70.81	1,128.11
10	Sanbornton...	1,032.66	500.00	112.64	77.70	......	......	1,723.00
11	Tilton..........	1,348.00	409.45	134.81	94.99	82.20	45.70	2,115.15
	Totals......	$21,501.42	$10,159.45	$1,786.78	$761.19	$232.20	$132.51	$34,573.55

COUNTY.

EXPENDITURES.

	Expended for new buildings.	Interest and debt.	Permanent repairs.	Miscellaneous expenses.	Teachers' salaries.	Total expended.*	Average cost of miscellaneous and salaries per scholar.
1	....	......	$14.82	$77.57	$1,540.69	$1,737.08	$7.03
2	....	......	34.16	574.37	925.50	1,601.03	......
3	....	......	....	116.41	950.00	1,190.31	5.89
4	$1,450.73	......	2.00	67.46	411.25	1,961.44	5.69
5	8,600.00	$600.00	....	392.11	3,223.61	12,995.72	6.40
6	....	......	....	59.35	1,251.77	1,456.12	5.50
7	15,000.00	......	417.69	519.88	3,998.32	19,996.39	7.93
8	....	......	....	143.30	2,292.80	2,576.10	6.80
9	....	......	....	66.43	986.30	1,170.23	5.37
10	....	......	....	136.00	1,537.00	1,818.00	7.00
11	350.96	......	....	88.74	1,573.29	2,072.99	9.18
	$25,401.69	$600.00	$468.67	$2,241.62	$18,691.03	$48,575.41	$6.79

* Salaries of school committees included.

CARROLL

SCHOOLS.

	TOWNS.	Legally organized school districts.	Different public schools.	Graded schools.	District and town high schools.	Schools averaging twelve scholars or less.	Schools averaging six or less.	Average length of schools in weeks.
1	Albany............	1	7	..	..	9	4	13.00
2	Bartlett	2	6	1	..	..	..	21.84
3	Brookfield	1	6	..	..	..	..	8.56
4	Chatham..........	1	7	..	..	3	2	19.00
5	Conway...........	1	17	4	..	5	2	18.90
6	Eaton	1	7	..	..	...	..	18.00
7	Effingham.........	1	7	..	..	1	..	11.00
8	Freedom..........	1	6	..	..	3	..	15.30
9	Hart's Location..	..	..	..	..	..	..	......
10	Jackson...........	1	6	..	..	1	..	16.80
11	Madison...........	1	8	..	..	4	..	15.00
12	Moultonborough .	1	12	..	..	7	1	18.75
13	Ossipee...........	1	10	..	..	..	..	24.70
14	Sandwich	1	11	..	..	5	..	20.00
15	Tamworth	1	11	..	..	3	3	15.50
16	Tuftonborough....	1	11	..	..	2	2	14.44
17	Wakefield.........	1	9	..	..	4	..	16.11
18	Wolfeborough.....	3	14	2	1	9	9	23.40
	Totals	20	155	7	1	56	23	17.13

COUNTY.

SCHOOLHOUSES.

	Number of school-houses.	Unfit for use.	Built during the year.	Having maps or globes.	Estimated value of school buildings, furniture, and sites.	Estimated value of apparatus.
1	7	..	..	5	....	$25.00
2	6	1	..	6	....	90.00
3	5	1	..	..	$1,325.00	5.00
4	7	2	1	..	2,600.00	25.00
5	16	2	..	6	8,000.00	130.00
6	7	1	..	1	879.81	20.00
7	10	..	..	4	....	20.00
8	8	..	..	2	550.00	20.00
9	..	..	..	..	....	.....
10	6	..	1	4	1,350.00	12.00
11	9	..	..	..	1,000.00	14.00
12	13	2	..	6	1,850.00	100.00
13	17	7	..	8	4,500.00	20.00
14	17	1	..	5	2,931.91	15.00
15	13	..	..	2	2,865.00	70.00
16	11	1	..	11	2,700.00	80.00
17	12	..	..	10	6,075.00	50.00
18	12	..	..	..	5,000.00	100.00
	166	18	2	70	$41,626.72	$796.00

CARROLL

SCHOLARS.

	TOWNS.	Selectmen's enumeration between five and fifteen.		Number of boys enrolled.	Number of girls enrolled.	Under six years.	Between six and sixteen.	Over sixteen years.	Average daily attendance.	Number pursuing higher branches.	Number reported between five and fifteen not attending any school.
		Boys	Girls								
1	Albany	...	...	52	42	6	85	3	74	...	73
2	Bartlett	...	...	96	102	12	164	22	150	...	..
3	Brookfield.....	...	...	42	36	4	62	12	63	1	..
4	Chatham.......	...	...	63	64	6	104	17	83	7	3
5	Conway........	220	225	221	256	56	402	19	318	44	50
6	Eaton..........	68	55	70	67	11	111	15	108	3	2
7	Effingham	60	63	80	81	17	135	9	22	13	..
8	Freedom.......	55	51	66	42	5	90	18	57	...	1
9	Hart's Locat'n.	2	3	4	4	..	6	2	....	...	..
10	Jackson........	55	50	62	64	10	99	17	135	16	4
11	Madison	...	...	79	72	11	130	10	114	...	5
12	Moultonboro'..	119	139	151	113	23	224	36	203	63	3
13	Ossipee	...	...	165	175	75	195	80	262	19	15
14	Sandwich......	98	102	125	119	19	189	36	175	47	5
15	Tamworth.....	...	...	119	116	13	205	27	197	95	28
16	Tuftonborough	...	...	83	76	19	130	10	133	29	1
17	Wakefield	124	116	147	158	30	255	20	207	68	8
18	Wolfeborough.	...	...	96	95	14	159	18	139	23	..
	Totals.......	801	804	1,721	1,682	331	2,745	371	2,440	428	198

COUNTY.

TEACHERS.

	Number of different male teachers employed.	Average wages of male teachers per month.	Number of different female teacers employed.	Average wages of female teachers per month.	Number teaching the first time.	Number teaching the same school more than one term.	Number of teachers from normal schools.
1	..	......	9	$15.75	4	3	..
2	..	......	9	18.00	1	4	2
3	1	$16.00	3	24.00	1	2	..
4	3	26.00	6	14.00	2	..	1
5	4	37.00	17	27.00	5	7	4
6	2	21.00	8	19.62	1	3	1
7	1	24.00	7	28.00	2	2	..
8	5	26.00	6	18.49	2	..	1
9	..	......	..	......	..	..	..
10	3	31.66	6	21.86	1	..	1
11	2	20.50	8	22.50	3	4	..
12	2	23.00	13	20.35	5	3	1
13	8	30.00	5	25.00	1	7	2
14	7	24.80	8	21.83	1	5	1
15	1	27.00	10	19.66	1	1	..
16	2	30.00	9	19.00	2	5	..
17	3	33.33	13	27.15	4	4	2
18	4	29.00	13	26.25	1	7	1
	48	$26.61	150	$21.67	37	57	17

CARROLL

REVENUE.

	TOWNS.	Amount raised by town tax for support of schools.	Amount raised by district tax for schools.	Literary fund.	Local funds and dog tax.	Railroad tax.	Contributed.	Entire amount of revenue.
1	Albany........	$168.00	$200.00	$34.16	....	....	......	$402.16
2	Bartlett.......	448.00	400.00	136.79	....	...	......	984.79
3	Brookfield.....	269.50	... .	45.44	....	....	......	314.94
4	Chatham......	1,953.87	....	73.65	....	....	$109.00	2,136.52
5	Conway.......	2,484.50	....	278.77	$158.10	....	......	2,921.37
6	Eaton.........	441.50	86.54	76.25	13.55	....	14.40	632.24
7	Effingham.....	530.50	....	121.60	20.00	....	......	672.10
8	Freedom......	514.50	....	86.62	....	....	20.39	621.51
9	Hart's Locat'n	75.00	....	6.40	....	....	......	81.40
10	Jackson.......	494.00	....	90.88	25.10	$83.02	55.00	748.00
11	Madison.......	574.02	....	90.24	....	....	36.50	700.76
12	Moultonboro'.	907.60	....	176.90	115.50	....	33.00	1,233.00
13	Ossipee........	931.46	600.00	238.08	....	....	25.00	1,794.54
14	Sandwich.....	1,102.50	....	186.66	177.28	....	75.38	1,541.82
15	Tamworth....	728.00	....	155.55	75.00	....	......	958.55
16	Tuftonboro'...	618.00	....	99.43	91.00	....	......	808.43
17	Wakefield.....	1,081.50	....	188.80	104.75	....	......	1,375.05
18	Wolfeboro'....	1,463.09	....	264.96	....	....	......	1,728.05
	Totals......	$14,785.54	$1,286.54	$2,351.18	$780.28	$83.02	$368.67	$19,655.23

COUNTY.

EXPENDITURES.

	Expended for new buildings.	Interest and debt.	Permanent repairs.	Miscellaneous expenses.	Teachers' salaries.	Total expended.*	Average cost of miscellaneous and salaries per scholar.
1	....	....	....	$11.45	$287.30	$334.75	$4.09
2	....	....	....	....	999.00	1,024.00	.....
3	....	....	....	15.63	295.20	333.83	4.04
4	$600.00	....	$1,934.56	109.00	510.35	3,193.91	4.87
5	....	....	150.66	332.45	2,221.00	2,963.61	5.35
6	....	....	6.85	1.50	477.40	531.25	3.19
7	....	....	....	43.03	458.50	594.53	2.57
8	....	....	....	114.11	503.50	657.61	5.72
9	....	....	....	....	81.40	81.40	10.19
10	1.50	....	....	3.16	436.25	466.91	2.92
11	....	....	....	40.70	680.00	762.70	4.76
12	....	....	....	65.00	1,168.00	1,299.00	9.40
13	16.50	....	41.20	49.26	1,469.50	1,791.36	4.76
14	....	....	17.21	118.04	1,217.50	1,432.75	4.94
15	....	....	17.00	33.00	843.00	973.00	4.43
16	....	....	....	54.94	728.45	844.64	5.31
17	....	....	....	118.83	1,058.00	1,263.83	.39
18	....	....	....	125.02	1,385.00	1,600.02	7.43
	$618.00	....	$2,167.48	$1,235.12	$14,819.35	$20,149.10	$4.96

* Salaries of school committees included.

CHESHIRE

SCHOOLS.

	TOWNS.	Legally organized school districts.	Different public schools.	Graded schools.	District and town high schools.	Schools averaging twelve scholars or less.	Schools averaging six or less.	Average length of schools in weeks.
1	Alstead	1	10	2	..	3	..	29.00
2	Chesterfield	1	10	1	..	4	..	23.50
3	Dublin	1	6	..	..	3	..	20.00
4	Fitzwilliam	1	12	1	..	4	..	20.00
5	Gilsum	1	6	2	..	2	..	21.20
6	Harrisville	1	6	1	..	1	..	20.00
7	Hinsdale	1	10	6	1	1	..	30.00
8	Jaffrey	1	10	2	..	..	..	28.00
9	Keene	2	34	24	1	10	1	31.66
10	Marlborough	1	7	1	..	..	..	27.85
11	Marlow	1	9	4	1	3	2	18.78
12	Nelson	1	5	..	..	3	1	11.00
13	Richmond	1	7	..	..	2	3	21.80
14	Rindge	1	10	..	..	2	3	18.00
15	Roxbury	1	1	..	..	..	..	21.30
16	Stoddard	1	5	..	..	4	..	20.00
17	Sullivan	1	4	..	..	2	..	19.95
18	Surry	1	3	..	..	1	..	24.00
19	Swanzey	1	11	3	..	..	..	29.60
20	Troy	1	7	..	..	3	1	22.50
21	Walpole	2	16	6	1	13	3	28.00
22	Westmoreland	1	8	..	..	3	..	28.62
23	Winchester	1	18	8	1	1	..	29.00
	Totals	25	215	61	5	65	14	23.64

COUNTY.

SCHOOLHOUSES.

	Number of schoolhouses.	Unfit for use.	Built during the year.	Having maps or globes.	Estimated value of school buildings, furniture, and sites.	Estimated value of apparatus.
1	14	3	1	10	$5,000.00	$75.00
2	14	4	..	10	4,000.00	40.00
3	6	1	..	6	2,800.00	40.00
4	11	..	..	12	6,199.00	300.00
5	6	1	..	6	3,200.00	100.00
6	5	..	..	5	3,500.00	75.00
7	5	..	1	6	14,600.00	1,000.00
8	13	4	..	12	9,126.00	250.00
9	18	..	1	33	101,927.00	1,400.00
10	8	3	..	8	6,000.00	150.00
11	8	..	..	7	2,500.00	130.00
12	6	..	..	5	450.00	30.00
13	10	..	..	6	2,474.00	85.00
14	9	1	..	9	5,451.84	150.00
15	3	2	..	1	320.00	5.00
16	7	2	..	7	1,550.00	55.00
17	5	..	..	5	2,150.00	65.00
18	4	..	..	2	1,195.00	18.00
19	10	1	..	11	11,000.00	160.00
20	7	1	..	5	3,700.00	75.00
21	14	..	..	16	10,000.00	200.00
22	12	2	..	12	3,529.00	75.00
23	17	4	2	18	14,710.00	250.00
	212	29	5	212	$215,381.84	$4,728.00

CHESHIRE

SCHOLARS.

	TOWNS.	Selectmen's enumeration between five and fifteen.		Number of boys enrolled.	Number of girls enrolled.	Under six years.	Between six and sixteen.	Over sixteen years.	Average daily attendance.	Number pursuing higher branches.	Number reported between five and fifteen not attending any school.
		Boys	Girls								
1	Alstead	82	74	115	89	7	183	14	126	28	1
2	Chesterfield ...	65	71	105	114	7	170	42	141	60	9
3	Dublin	49	38	57	45	9	86	7	74	11	4
4	Fitzwilliam....	...	...	157	136	25	251	17	260	47	..
5	Gilsum.........	49	37	71	51	8	102	12	103	30	..
6	Harrisville	...	...	92	81	13	150	10	120	22	..
7	Hinsdale.......	...	...	210	217	29	353	45	293	50	15
8	Jaffrey.........	103	108	123	119	16	203	23	153	35	18
9	Keene...... ...	...	...	686	619	67	1,137	101	904	138	104
10	Marlborough ..	...	...	182	149	22	294	15	200	35	8
11	Marlow	47	53	67	73	5	109	26	108	48	8
12	Nelson	36	35	51	44	5	77	13	69	22	..
13	Richmond	53	49	64	68	6	112	14	102	41	2
14	Rindge.........	91	83	98	86	16	149	19	113	..	..
15	Roxbury.......	15	14	15	15	2	22	6	17	..	..
16	Stoddard.......	38	38	57	54	1	93	17	93	28	3
17	Sullivan	46	37	36	41	4	62	11	69	19	1
18	Surry	...	...	23	34	4	60	6	47	..	..
19	Swanzey.......	134	128	176	167	27	287	29	242	32	9
20	Troy	...	...	66	82	15	114	19	97	25	..
21	Walpole	...	...	247	175	20	376	26	304	36	13
22	Westmoreland	97	70	97	76	10	145	20	135	31	..
23	Winchester....	213	198	336	290	35	541	50	382	54	25
	Totals......	1,118	1,033	3,141	2,825	358	4,876	542	4,152	792	220

COUNTY.

TEACHERS.

	Number of different male teachers employed.	Average wages of male teachers per month.	Number of different female teachers employed.	Average wages of female teachers per month.	Number teaching the first time.	Number teaching the same school more than one term.	Number of teachers from normal schools.
1	..	......	18	$22.73	..	8	4
2	3	$35.68	11	25.17	2	6	2
3	1	30.00	7	28.00	1	4	2
4	3	45.33	15	28.00	6	5	1
5	..	......	10	24.80	..	4	1
6	2	35.75	8	27.40	1	1	1
7	2	72.90	11	29.63	2	9	2
8	1	28.00	14	27.22	..	6	..
9	3	76.21	41	33.65	1	33	13
10	..	......	7	34.21	..	7	1
11	4	46.00	10	19.47	2	4	2
12	..	......	8	25.00	1	3	1
13	1	30.00	11	27.45	6	4	3
14	..	......	14	27.00	6	5	..
15	..	......	2	25.00	1	..	..
16	..	......	8	23.81	1	4	2
17	..	......	4	26.75	..	4	..
18	..	......	5	25.89	..	3	..
19	..	......	14	29.70	3	11	3
20	2	48.00	7	24.57	1	6	..
21	7	56.00	19	26.25	6	12	2
22	1	26.00	11	26.66	2	5	1
23	3	45.48	22	22.45	5	19	..
	33	$44.25	277	$26.51	47	163	41

CHESHIRE

REVENUE.

	TOWNS.	Amount raised by town tax for support of schools.	Amount raised by district tax for schools.	Literary fund.	Local funds and dog tax.	Railroad tax.	Contributed.	Entire amount of revenue.
1	Alstead	$2,399.49	....	$136.96	....	......	......	$2,536.45
2	Chesterfield	1,600.00	....	159.36	....	......	......	1,759.36
3	Dublin	104.79	....	55.68	$692.64	......	......	853.11
4	Fitzwilliam	2,000.00	....	164.09	79.00	......	$17.28	2,260.37
5	Gilsum	850.00	....	90.53	18.00	......	......	958.53
6	Harrisville	800.00	....	101.87	42.52	......	31.25	975.64
7	Hinsdale	3,062.50	$2,850.00	248.88	....	......	251.38	6,412.76
8	Jaffrey	1,655.50	....	353.12	....	......	31.50	2,040.12
9	Keene	13,177.75	5,983.95	680.66	395.00	......	......	20,237.36
10	Marlborough	1,211.00	....	186.24	616.10	$74.63	......	2,087.97
11	Marlow	787.50	250.00	88.45	87.15	......	......	1,213.10
12	Nelson	700.00	....	68.32	....	......	......	768.32
13	Richmond	1,014.50	....	91.50	....	......	......	1,106.00
14	Rindge	1,600.00	....	101.00	....	......	......	1,701.00
15	Roxbury	200.00	....	23.68	....	......	......	223.68
16	Stoddard	667.50	300.00	71.68	....	......	......	1,039.18
17	Sullivan	600.00	....	49.28	....	......	11.40	660.68
18	Surry	471.00	....	42.70	15.00	......	......	528.70
19	Swanzey	2,900.00	....	199.47	78.00	......	29.71	3,207.18
20	Troy	900.00	....	99.84	24.00	123.90	240.98	1,388.72
21	Walpole	3,500.00	650.00	262.40	....	......	75.00	4,487.40
22	Westmoreland	1,361.50	106.36	117.12	168.00	......	......	1,752.98
23	Winchester	6,600.00	....	376.27	114.00	......	......	7,090.27
	Totals	$48,163.03	$10,140.31	$3,769.10	$2,329.41	$198.53	$688.50	$65,288.88

COUNTY.

EXPENDITURES.

	Expended for new buildings.	Interest and debt.	Permanent repairs.	Miscellaneous expenses.	Teachers' salaries.	Total expended.*	Average cost of miscellaneous and salaries per scholar.
1	$599.00	......	......	$750.74	$1,049.75	$2,474.49	$8.82
2	....	......	......	140.92	1,559.60	1,805.72	7.76
3	....	......	......	48.80	852.50	969.30	8.94
4	....	......	$1.25	214.39	1,939.30	2,379.94	......
5	....	$600.00	......	111.98	840.00	1,617.98	7.80
6	....	......	......	106.84	868.80	1,042.39	5.63
7	1,388.49	......	360.62	1,087.27	3,564.00	6,550.38	14.98
8	....	......	......	217.66	1,713.60	2,027.17	7.97
9	8,200.00	......	829.15	1,251.84	10,862.64	21,278.63	8.90
10	....	......	102.70	264.13	1,669.00	2,149.58	6.15
11	....	......	44.46	51.64	771.57	929.67	6.05
12	....	......	......	71.92	687.50	815.17	8.83
13	....	......	......	142.18	907.50	1,192.08	8.07
14	....	......	......	118.54	1,195.50	1,426.04	......
15	....	......	......	2.00	132.50	146.25	4.77
16	....	......	149.15	99.32	625.00	928.47	8.36
17	....	......	......	100.92	534.50	666.42	8.38
18	....	......	......	43.69	344.60	425.79	6.81
19	....	......	353.10	307.50	2,500.25	3,210.85	8.18
20	....	......	98.06	97.18	1,184.00	1,424.24	8.70
21	....	......	200.00	360.00	3,468.00	4,237.24	9.09
22	....	......	150.00	150.89	1,454.00	1,824.84	9.27
23	1,525.39	......	301.22	184.20	4,335.50	6,660.85	7.20
	$11,712.88	$600.00	$2,589.71	$5,924.55	$43,059.61	$66,183.49	$8.03

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* Salaries of school committees included.

COOS

SCHOOLS.

	TOWNS.	Legally organized school districts.	Different public schools.	Graded schools.	District and town high schools.	Schools averaging twelve scholars or less.	Schools averaging six or less.	Average length of schools in weeks.
1	Berlin	1	8	8	1	1	..	30.51
2	Carroll	1	7	..	..	1	2	14.85
3	Clarksville	1	4	..	..	..	..	16.00
4	Colebrook	2	13	..	1	6	1	19.61
5	Columbia	1	19	..	..	4	2	16.50
6	Dalton	1	6	..	..	..	1	17.10
7	Dummer	1	6	..	..	2	..	16.00
8	Errol	1	4	..	..	1	1	16.00
9	Gorham	1	9	7	1	1	..	28.70
10	Jefferson	1	8	1	..	2	..	19.50
11	Lancaster	2	18	5	1	2	..	24.11
12	Milan	1	6	..	..	..	..	26.00
13	Northumberland	1	10	1	..	2	..	18.20
14	Pittsburg	1	10	..	..	5	1	18.40
15	Randolph	1	3	..	..	3	..	22.33
16	Shelburne	1	4	..	..	3	..	19.20
17	Stark	1	8	..	..	2	1	16.63
18	Stewartstown	1	13	..	..	5	1	16.38
19	Stratford	1	12	1	..	6	2	16.60
20	Whitefield	2	12	1	1	..	..	28.66
21	Wentworth's L'n	..	..	..	..	..	..	....
	Totals	23	180	24	5	46	12	20.06

COUNTY.

	SCHOOLHOUSES.					
	Number of schoolhouses.	Unfit for use.	Built during the year.	Having maps or globes.	Estimated value of school buildings, furniture, and sites.	Estimated value of apparatus.
1	5	1	..	4	$15,000.00	$75.00
2	4	1	..	..	1,000.00	15.00
3	4	1	..	..	505.00	.18
4	13	..	..	9	4,460.00	118.00
5	10	..	..	10	1,000.00	15.00
6	8	3	..	..	425.00	10.00
7	5	..	1	2	2,118.00	20.00
8	3	1	..	..	800.00	2.00
9	5	1	1	7	5,500.00	200.00
10	8	2	..	8	3,000.00	20.00
11	14	..	..	9	7,567.00	200.00
12	6	2	..	6	1,850.00	85.00
13	9	..	..	5	3,000.00	75.00
14	6	..	..	1	1,465.00	75.00
15	3	2	..	1	500.00	20.00
16	4	2	..	1	1,000.00	25.00
17	8	..	..	1	2,300.00	......
18	12	1	..	3	1,750.00	......
19	10	1	..	4	4,325.00	25.00
20	9	1	..	2	3,000.00	25.00
21	..	..	..	..	....	......
	146	19	2	73	$60,565.00	$1,005.18

COOS

SCHOLARS.

	TOWNS.	Selectmen's enumeration between five and fifteen.		Number of boys enrolled.	Number of girls enrolled.	Under six years.	Between six and sixteen.	Over sixteen years.	Average daily attendance.	Number pursuing higher branches.	Number reported between five and fifteen not attending any school.
		Boys	Girls								
1	Berlin...........	....	....	297	245	57	464	21	290	..	10
2	Carroll..........	73	80	66	67	10	118	5	100	..	..
3	Clarksville......	....	....	26	31	6	45	6	46	..	..
4	Colebrook	142	179	142	165	21	253	33	226	49	21
5	Columbia	60	40	76	68	20	100	24	130	8	..
6	Dalton	....	....	83	64	5	132	10	96	4	2
7	Dummer........	65	39	75	47	7	102	13	84	8	5
8	Errol............	19	21	24	21	3	41	1	43	..	5
9	Gorham.........	...	....	180	141	16	257	48	297	51	..
10	Jefferson........	....	....	122	99	16	173	32	153	23	..
11	Lancaster.......	224	192	277	247	36	440	48	380	97	7
12	Milan............	....	...	107	110	9	186	22	171	26	10
13	Northumberl'nd	....	....	152	155	13	280	14	250	6	..
14	Pittsburg	60	45	88	58	10	130	6	110	1	12
15	Randolph	....	....	17	25	2	40	..	42	..	..
16	Shelburne	30	29	39	24	2	50	11	42	13	..
17	Stark............	68	66	89	76	15	136	14	111	10	5
18	Stewartstown ..	88	81	112	117	16	173	40	227	52	..
19	Stratford........	....	....	132	102	7	211	16	....	13	12
20	Whitefield	187	181	195	193	100	248	40	295	40	8
21	Wentw'th's L'n	....	....	....	....	..	....	..	....	..	..
	Totals	1,016	953	2,299	2,055	371	3,579	404	3,093	401	97

COUNTY.

TEACHERS.

	Number of different male teachers employed.	Average wages of male teachers per month.	Number of different female teachers employed.	Average wages of female teachers per month.	Number teaching the first time.	Number teaching the same school more than one term.	Number of teachers from normal schools.
1	1	$88.00	10	$27.15	..	8	..
2	..	......	9	23.08	..	3	..
3	1	26.00	6	18.53	2	1	..
4	4	35.75	15	21.66	2	6	3
5	2	20.00	14	19.00	2	..	..
6	..	......	10	19.81	1	1	..
7	2	27.00	9	21.27	3	1	..
8	..	......	5	16.18	..	1	..
9	2	76.64	7	29.82	2	9	..
10	..	......	12	24.50	3	2	1
11	3	26.75	19	27.50	2	11	3
12	4	39.75	6	26.80	1	4	..
13	2	29.50	10	20.81	3	5	2
14	..	......	13	18.00	2	5	1
15	..	......	5	20.30	..	2	..
16	..	......	5	24.00	1	3	1
17	2	26.50	11	23.75	6	3	1
18	3	20.50	13	15.17	4	2	..
19	2	33.00	19	41.00	5	4	8
20	4	42.00	11	21.50	2	9	2
21	..	......	..	......	..	..	..
	32	$37.79	219	$22.59	41	80	22

COOS

REVENUE.

	TOWNS.	Amount raised by town tax for support of schools.	Amount raised by district tax for schools.	Literary fund.	Local funds and dog tax.	Railroad tax.	Contributed.	Entire amount of revenue.
1	Berlin..........	$2,500.00	....	$360.96	......	$46.06	....	$2,907.02
2	Carroll.........	425.36	....	79.91	$24.00	......	$46.00	575.27
3	Clarksville.....	150.00	$60.00	9.28	64.00	48.04	8.00	339.32
4	Colebrook......	1,581.50	150.00	290.94	......	......	94.50	2,116.94
5	Columbia.......	800.00	... .	89.60	......	......	....	889.60
6	Dalton..........	500.00	....	95.36	17.54	......	... .	612.90
7	Dummer.......	500.00	....	78.76	29.13	16.99	3.56	628.44
8	Errol............	250.00	....	29.00	......	......	....	279.00
9	Gorham........	2,300.00	....	213.76	127.00	......	727.19	3,367.95
10	Jefferson.......	800.00	....	218.26	......	......	30.00	1,048.26
11	Lancaster......	1,931.97	1,600.00	359.90	219.00	......	250.37	4,361.24
12	Milan...........	1,000.00	....	117.12	128.50	......	....	1,245.62
13	Northumberl'd	689.00	....	183.04	77.00	40.00	203.00	1,192.04
14	Pittsburg.......	811.00	....	67.20	57.00	......	... .	935.20
15	Randolph.......	375.00	....	61.16	......	......	....	436.16
16	Shelburne......	485.50	....	39.04	......	......	....	524.54
17	Stark...........	588.50	....	100.48	45.92	126.15	....	861.05
18	Stewartstown..	932.00	....	173.21	......	......	....	1,105.21
19	Stratford.......	1,078.00	1,140.00	172.16	......	......	325.60	2,715.76
20	Whitefield......	1,004.00	1,500.00	903.73	17.10	18.50	....	3,443.33
21	Wentw'th's L'n	....	....	....	......	......	....	....
	Totals.......	$18,701.83	$4,450.00	$3,642.87	$806.19	$295.74	$1,688.22	$29,584.85

COUNTY.

EXPENDITURES.

	Expended for new buildings.	Interest and debt.	Permanent repairs.	Miscellaneous expenses.	Teachers' salaries.	Total expended.*	Average cost of miscellaneous and salaries per scholar.
1	$50.00	....	....	$60.00	$2,238.75	$2,408.75	......
2	....	....	....	34.66	350.50	421.16	$3.01
3	....	$60.00	....	3.00	182.00	277.00	......
4	....	....	$150.00	63.33	1,311.75	1,641.58	4.17
5	....	....	....	10.00	619.00	879.00	6.10
6	....	....	....	77.91	519.00	601.91	4.06
7	659.96	4.40	10.00	38.95	535.00	1,281.31	4.66
8	....	....	....	10.00	236.00	254.00	5.47
9	492.50	....	273.90	361.05	2,637.00	3,859.70	9.34
10	....	....	....	143.44	912.70	1,092.14	4.77
11	....	....	40.00	799.57	3,060.07	3,979.64	7.34
12	....	....	40.59	127.78	1,129.25	1,379.12	5.78
13	....	....	52.00	414.91	689.63	1,222.54	2.76
14	....	....	....	5.00	499.75	545.75	6.07
15	....	....	....	21.00	349.50	388.50	8.82
16	....	....	....	40.38	462.00	527.38	9.13
17	....	135.00	....	33.00	532.00	773.00	.34
18	....	....	....	96.80	670.28	847.08	3.94
19	....	1,140.00	....	78.47	1,167.00	2,424.72	5.32
20	....	....	....	456.00	2,740.33	3,196.33	8.23
21	....	....	....	....	....	....	......
	$1,202.46	$1,339.40	$566.49	$2,875.25	$20,841.51	$28,000.61	$5.51

* Salaries of school committees included.

GRAFTON

SCHOOLS.

	TOWNS.	Legally organized school districts.	Different public schools.	Graded schools.	District and town high schools.	Schools averaging twelve scholars or less.	Schools averaging six or less.	Average length of schools in weeks.
1	Alexandria	1	9	..	..	2	2	17.00
2	Ashland	2	5	4	1	2	..	32.20
3	Bath	1	10	..	..	6	..	23.90
4	Benton	1	3	..	..	1	..	22.66
5	Bethlehem	2	12	3	1	3	2	20.11
6	Bridgewater	1	7	..	..	3	2	15.17
7	Bristol	2	19	1	1	3	2	20.88
8	Campton	1	11	..	..	4	1	16.90
9	Canaan	1	12	..	..	3	..	19.34
10	Dorchester	1	6	..	..	1	..	11.00
11	Easton	3	6	..	..	3	..	8.85
12	Ellsworth	1	2	..	..	..	..	17.00
13	Enfield	2	11	2	1	3	2	30.00
14	Franconia	1	4	2	..	1	..	34.50
15	Grafton	1	10	..	..	4	1	16.60
16	Groton	1	5	..	..	2	..	14.00
17	Hanover	2	15	4	1	4	1	29.62
18	Haverhill	3	14	1	1	2	..	29.00
19	Hebron	1	4	..	..	4	1	12.50
20	Holderness	1	7	..	..	1	1	19.80
21	Landaff	1	5	..	..	1	..	23.40
22	Lebanon	2	13	..	..	2	2	26.90
23	Lincoln	1	2	..	..	..	1	......
24	Lisbon	3	14	6	1	3	..	23.90
25	Littleton	2	22	7	1	5	1	37.50
26	Livermore	1	2	..	..	..	..	9.50
27	Lyman	1	7	..	..	2	..	21.40
28	Lyme	1	13	1	..	4	1	18.95
29	Monroe	1	5	..	..	2	..	26.00
30	Orange	1	5	..	..	2	1	13.40
31	Orford	1	9	1	..	6	1	30.00
32	Piermont	1	12	..	..	7	1	21.33
33	Plymouth	1	10	4	1	2	..	33.50
34	Rumney	1	8	..	..	1	..	22.70
35	Thornton	1	10	..	..	2	..	8.70
36	Warren	1	10	2	..	4	2	19.20
37	Waterville	1	2	..	..	..	..	15.00
38	Wentworth	1	10	..	..	4	..	19.00
39	Woodstock	1	3	..	..	1	..	15.00
	Totals	52	334	38	9	100	25	18.06

COUNTY.

SCHOOLHOUSES.

	Number of school-houses.	Unfit for use.	Built during the year.	Having maps or globes.	Estimated value of school buildings, furniture, and sites.	Estimated value of apparatus.
1	10	..	..	8	....	......
2	3	..	..	4	$13,275.00	$25.00
3	11	1	..	10	2,700.00	30.00
4	6	1	..	3	1,220.00	......
5	10	1	..	10	3,275.00	300.00
6	7	1	..	..	915.00	......
7	9	2	..	4	5,450.00	100.00
8	14	..	..	11	2,331.00	60.00
9	20	6	..	3	6,000.00	160.00
10	9	2	..	..	1,200.00	12.00
11	3	..	..	2	1,127.72	3.00
12	2	..	..	1	400.00	5.00
13	14	..	..	11	5,100.00	500.00
14	5	1	..	4	1,300.00	10.00
15	11	..	..	..	600.00	25.00
16	7	1	..	1	1,300.00	12.00
17	18	3	..	14	11,463.00	180.00
18	18	6	..	15	4,492.86	200.00
19	4	2	..	1	650.00	10.00
20	11	4	1	2	3,000.00	50.00
21	7	2	..	1	2,300.00	5.00
22	13	1	..	10	2,880.00	25.25
23	2	..	..	..	300.00	......
24	11	..	..	10	5,800.00	150.00
25	16	3	1	18	29,000.00	500.00
26	1	..	..	..	200.00	......
27	7	..	..	3	1,000.00	40.00
28	12	..	1	12	2,926.50	......
29	6	2	..	5	1,010.00	47.00
30	7	3	..	..	132.00	42.00
31	14	2	..	8	1,500.00	50.00
32	13	2	..	2	700.00	25.00
33	7	..	2	7	9,400.00	30.00
34	9	..	..	4	2,091.00	5.00
35	10	..	..	2	1,500.00	20.00
36	10	1	..	3	2,250.00	50.00
37	1	..	..	..	200.00	5.00
38	10	2	..	6	1,150.00	15.00
39	4	..	..	1	282.00	......
	252	49	5	196	$130,421.08	$2,691.25

GRAFTON

SCHOLARS.

	TOWNS.	Selectmen's enumeration between five and fifteen.		Number of boys enrolled.	Number of girls enrolled.	Under six years.	Between six and sixteen.	Over sixteen years.	Average daily attendance.	Number pursuing higher branches.	Number reported between five and fifteen not attending any school.
		Boys	Girls								
1	Alexandria...	66	64	84	71	15	125	15	122	18	1
2	Ashland.......	88	95	90	105	33	146	16	....	16	1
3	Bath.	99	87	115	96	17	162	32	144	59	3
4	Benton........	40	26	32	32	7	48	9	40	4	5
5	Bethlehem.. .	114	110	159	159	11	267	40	172	19	5
6	Bridgewater..	35	36	42	37	3	60	16	57	7	4
7	Bristol........	100	84	123	130	8	218	27	199	27	..
8	Campton......	92	99	105	112	..	164	47	179	20	..
9	Canaan	....	....	137	149	22	257	7	270	32	2
10	Dorchester...	55	46	73	62	15	102	18	105	6	3
11	Easton........	21	21	37	24	3	57	1	....	..	..
12	Ellsworth	....	....	24	33	4	49	4	49	2	44
13	Enfield........	....	....	140	156	19	256	21	216	41	..
14	Franconia....	42	43	90	60	1	125	24	74	3	..
15	Grafton........	86	73	112	80	16	151	25	152	18	2
16	Groton........	58	66	64	65	8	107	14	83	1	6
17	Hanover......	....	....	187	156	18	288	37	255	56	8
18	Haverhill.....	219	193	209	184	3	359	31	264	33	..
19	Hebron.......	21	20	25	25	6	42	2	40	9	..
20	Holderness...	55	56	57	76	9	107	17	113	26	8
21	Landaff........	38	47	82	66	11	105	32	105	28	..
22	Lebanon......	....	....	154	154	20	273	15	236	71	4
23	Lincoln.......	....	....	8	5	1	11	1	12	1	..
24	Lisbon........	130	126	218	206	23	289	112	299	64	5
25	Littleton......	257	341	181	221	22	609	75	583	81	54
26	Livermore....	....	....	15	11	4	22	...	18	..	23
27	Lyman........	....	....	71	55	11	105	10	80	27	2
28	Lyme.........	121	118	161	148	17	239	53	227	39	5
29	Monroe.......	63	67	63	67	14	107	9	82	9	..
30	Orange........	....	....	43	41	14	67	3	46	5	..
31	Orford.... ...	74	75	102	110	38	148	26	133	25	5
32	Piermont.....	71	70	96	80	10	154	12	145	3	..
33	Plymouth	....	....	165	165	23	258	49	208	48	5
34	Rumney......	107	97	99	122	15	196	10	145	30	4
35	Thornton.....	50	58	95	89	12	140	32	114	11	4
36	Warren.......	70	60	100	82	9	151	22	136	12	2
37	Waterville....	5	3	3	5	..	6	2	8	1	..
38	Wentworth....	61	59	85	86	15	136	20	130	5	2
39	Woodstock...	29	27	31	42	3	62	8	55	11	4
	Totals......	2,267	2,267	3,677	3,567	480	6,167	794	5,296	868	211

COUNTY.

TEACHERS.

	Number of different male teachers employed.	Average wages of male teachers per month.	Number of different female teachers employed.	Average wages of female teachers per month.	Number teaching the first time.	Number teaching the same school more than one term.	Number of teachers from normal schools.
1	2	$20.00	10	$20.33	4	5	2
2	1	50.67	9	26.00	1	3	1
3	3	33.58	13	20.40	2	3	1
4	1	35.00	5	18.00	1	2	..
5	4	35.00	15	21.40	5	6	3
6	..	......	8	21.00	1	2	2
7	1	16.00	13	28.33	..	4	2
8	2	24.50	10	21.00	5	6	3
9	3	25.33	19	16.95	4	4	1
10	2	27.00	5	18.66	..	2	1
11	..	......	5	. ....	2	1	..
12	..	......	4	18.00	2	1	1
13	3	32.00	13	16.00	2	3	1
14	..	......	7	26.32	..	6	..
15	2	18.00	13	20.20	1	2	1
16	..	......	7	19.28	1	..	2
17	5	24.80	21	26.28	2	9	3
18	1	48.00	19	23.00	3	10	..
19	..	......	5	19.00	2	2	1
20	1	28.00	7	20.14	..	3	2
21	4	25.00	8	19.00	3	2	2
22	4	37.00	22	21.22	1	5	4
23	..	......	2	5.50	..	..	..
24	2	46.00	20	24.37	4	11	4
25	5	79.40	34	29.18	7	16	8
26	..	......	1	22.00	1	1	..
27	2	25.00	9	20.50	5	5	..
28	1	24.00	15	19.71	1	8	1
29	..	......	12	14.00	1	2	..
30	..	......	4	19.00	..	2	..
31	2	35.66	16	23.00	3	3	2
32	..	......	19	16.00	5	7	..
33	1	26.00	13	32.30	..	10	13
34	1	32.00	10	22.28	..	5	5
35	3	22.36	6	18.25	..	1	4
36	3	27.20	8	21.70	3	2	2
37	..	......	2	18.00	1	1	..
38	..	......	14	23.50	2	5	1
39	..	......	4	23.20	2	1	..
	59	$31.08	427	$21.43	77	121	63

GRAFTON

REVENUE.

	TOWNS.	Amount raised by town tax for support of schools.	Amount raised by district tax for schools.	Literary fund.	Local funds and dog tax.	Railroad tax.	Contributed.	Entire amount of revenue.
1	Alexandria..	$720.00	....	$96.99	$18.00	......	......	$834.99
2	Ashland......	822.50	$726.00	135.04	....	......	......	1,683.54
3	Bath..	916.57	....	154.88	....	$392.57	$202.00	1,666.02
4	Benton	400.00	....	42.88	....	......	......	442.88
5	Bethlehem...	1,400.00	350.00	120.42	115.00	......	12.00	1,997.42
6	Bridgewater.	441.00	....	54.29	31.00	14.74	70.00	611.03
7	Bristol.......	2,227.28	300.00	151.28	....	......	......	2,678.56
8	Campton	1,200.00	....	181.46	63.00	......	......	1,444.46
9	Canaan.......	1,043.00	....	195.20	122.00	......	18.75	1,378.95
10	Dorchester...	246.98	90.88	....	....	......	30.00	367.86
11	Easton	300.00	....	33.55	....	......	......	333.55
12	Ellsworth....	150.00	....	39.04	....	......	......	189.04
13	Enfield.......	2,045.50	....	158.60	45.00	200.00	......	2,449.10
14	Franconia....	650.00	....	77.44	60.00	......	......	787.44
15	Grafton	696.00	....	134.20	....	71.00	......	901.20
16	Groton	266.18	....	78.08	39.00	......	4.50	387.76
17	Hanover.....	2,211.96	1,000.00	438.65	137.98	483.00	133.50	4,405.09
18	Haverhill....	2,846.00	....	200.00	....	......	......	3,046.00
19	Hebron.......	203.00	....	33.56	14.00	......	......	250.56
20	Holderness..	395.50	850.00	87.04	....	1.54	43.74	1,377.82
21	Landaff.......	606.00	....	75.03	54.00	5.65	......	740.68
22	Lebanon.....	1,852.85	403.22	221.03	14.00	......	......	2,491.10
23	Lincoln......	140.50	....	10.39	8.00	......	......	158.89
24	Lisbon.......	2,400.00	400.00	220.16	....	......	......	3,020.16
25	Littleton.....	4,500.00	2,400.00	372.48	....	......	......	7,272.48
26	Livermore...	91.00	....	14.06	2.02	......	......	107.08
27	Lyman	329.00	200.00	86.40	259.59	......	18.00	882.99
28	Lyme.........	1,029.00	....	179.84	410.31	......	......	1,619.15
29	Monroe.......	407.80	....	77.44	....	......	......	485.24
30	Orange.......	337.00	....	40.96	37.00	......	......	414.96
31	Orford.... ..	1,271.50	....	129.28	594.56	......	......	1,995.34
32	Piermont ...	665.17	....	353.35	152.00	......	.....	1,170.52
33	Plymouth.....	3,768.00	....	244.00	51.00	......	......	4,063.00
34	Rumney......	682.50	200.00	140.30	....	200.00	112.00	1,334.80
35	Thornton....	290.50	....	113.28	128.75	......	16.00	548.53
36	Warren... ...	1,067.00	....	93.44	65.00	......	68.00	1,293.44
37	Waterville...	100.00	....	4.27	2.00	......	......	106.27
38	Wentworth..	469.00	500.00	120.96	19.00	71 04	20.00	1,200.00
39	Woodstock...	172.50	....	58.24	34.86	36.75	26.84	329.19
	Totals.....	$39,360.79	$7,420.10	$4,857.51	$2,479.07	$1,476.29	$875.33	$56,469.09

COUNTY.

EXPENDITURES.

	Expended for new buildings.	Interest and debt.	Permanent repairs.	Miscellaneous expenses.	Teachers' salaries.	Total expended.*	Average cost of miscellaneous and salaries per scholar.
1	$10.00	....	....	$49.78	$767.62	$922.90	$5.27
2	....	....	$51.00	240.10	1,363.00	1,654.10	6.58
3	....	....	....	503.46	913.40	1,491.86	7.07
4	....	....	....	135.24	333.00	488.24	6.23
5	....	....	125.00	105.00	1,825.56	2,160.56	6.07
6	....	....	....	36.53	558.61	645.14	7.28
7	....	$561.20	58.80	125.15	1,524.60	2,304.75	8.67
8	....	....	....	106.88	1,050.25	1,257.48	5.48
9	....	....	....	441.24	858.50	1,549.74	4.70
10	....	....	....	12.88	356.98	388.36	2.72
11	....	....	....	4.75	266.85	271.60	1.91
12	....	13.00	19.00	10.00	156.75	198.75	2.92
13	....	....	....	90.12	1,574.00	1,826.12	5.83
14	....	....	....	56.53	710.00	786.53	5.28
15	....	....	....	28.91	883.15	952.59	4.73
16	....	....	....	21.16	366.60	421.36	3.13
17	....	....	700.00	638.20	2,250.00	3,718.20	9.68
18	....	....	....	403.21	2,537.00	3,053.21	7.52
19	....	....	....	18.18	224.47	269.65	4.85
20	555.00	....	....	90.79	735.45	1,430.24	6.21
21	....	....	....	99.35	636.22	763.07	4.97
22	....	....	....	124.39	2,128.00	2,402.39	7.31
23	....	....	....	56.25	94.00	150.25	8.00
24	....	....	175.00	840.00	1,638.00	2,778.50	6.00
25	2,500.00	1,700.00	590.00	852.50	4,493.28	10,285.78	11.81
26	....	....	....	....	104.50	104.50	4.18
27	....	....	19.80	19.35	468.50	558.90	4.28
28	440.00	....	....	158.71	1,227.30	1,905.08	4.48
29	....	....	....	79.17	484.10	598.27	4.37
30	....	....	....	27.66	311.00	364.66	4.30
31	....	....	....	336.66	1,620.00	2,037.21	9.00
32	....	....	....	88.00	1,004.00	1,156.00	6.20
33	1,786.00	165.71	....	88.00	2,745.00	4,859.71	8.58
34	....	....	35.20	101.95	1,102.75	1,304.02	5.62
35	....	....	....	7.47	247.80	310.27	......
36	....	....	30.00	140.69	1,123.50	1,346.19	7.02
37	....	....	2.00	....	45.00	53.00	9.50
38	....	....	....	53.00	1,125.45	1,228.45	5.96
39	....	....	.50	10.35	314.09	344.19	4.36
	$5,291.00	$2,439.91	$1,806.30	$6,201.61	$40,168.28	$58,241.82	$6.00

* Salaries of school committees included.

SCHOOLS.

	TOWNS.	Legally organized school districts.	Different public schools.	Graded schools.	District and town high schools.	Schools averaging twelve scholars or less.	Schools averaging six or less.	Average length of schools in weeks.
1	Amherst	1	11	..	1	4	2	30.64
2	Antrim	1	8	1	..	2	..	25.00
3	Bedford	1	10	..	..	2	..	29.00
4	Bennington	1	2	2	..	..	..	26.00
5	Brookline	1	4	4	..	..	..	29.00
6	Deering	1	7	..	1	5	2	18.00
7	Francestown	1	8	1	..	2	..	20.25
8	Goffstown	2	14	2	..	10	5	23.00
9	Greenfield	1	5	1	..	1	..	19.15
10	Greenville	1	5	3	..	1	..	24.40
11	Hancock	1	8	..	1	4	2	16.40
12	Hillsborough	2	21	4	1	6	4	18.00
13	Hollis	1	10	2	1	..	..	29.70
14	Hudson	1	8	..	..	2	..	31.28
15	Litchfield	1	3	..	..	1	..	24.00
16	Lyndeborough	1	6	1	..	3	1	21.69
17	Manchester	1	77	70	1	2	..	34.00
18	Mason	1	5	..	..	..	..	29.50
19	Merrimack	1	10	..	..	6	1	30.18
20	Milford	1	13	6	1	2	..	32.00
21	Mont Vernon	2	4	..	1	1	1	27.00
22	Nashua	1	62	45	1	5	1	35.00
23	New Boston	1	13	2	..	8	..	16.10
24	New Ipswich	1	7	..	..	2	2	30.00
25	Pelham	1	5	..	..	..	..	30.00
26	Peterborough	1	11	5	1	1	..	25.00
27	Sharon	1	3	..	..	3	..	26.23
28	Temple	1	6	..	..	3	1	21.00
29	Weare	1	14	..	..	7	1	25.07
30	Wilton	1	11	4	1	1	2	30.00
31	Windsor	1	1	..	..	..	1	17.00
	Totals	34	372	153	11	84	26	25.59

COUNTY.

SCHOOLHOUSES.

	Number of school-houses.	Unfit for use.	Built during the year.	Having maps or globes.	Estimated value of school buildings, furniture, and sites.	Estimated value of apparatus.
1	10	..	..	10	$10,000.00	$150.00
2	9	3	..	8	3,911.16	50.00
3	11	..	..	10	5,057.88	150.00
4	2	..	..	2	2,247.78	75.00
5	7	3	..	3	2,500.00	75.00
6	11	5	..	7	2,798.00	40.00
7	7	..	..	7	....	40.00
8	11	..	..	11	12,000.00	100.00
9	4	1	..	5	5,440.00	20.00
10	3	..	..	4	....	100.00
11	9	..	..	9	2,250.00	....
12	18	3	..	17	15,448.00	50.00
13	9	..	..	8	17,000.00	1,000.00
14	9	..	1	9	4,800.00	100.00
15	4	1	..	4	665.75	85.00
16	9	..	..	..	2,500.00	10.00
17	24	1	..	75	400,000.00	7,000.00
18	6	..	..	5	3,000.00	35.00
19	13	2	1	11	5,866.00	350.00
20	9	..	..	13	20,000.00	500.00
21	5	1	..	5	1,825.00	35.50
22	17	..	..	39	221,735.00	10,660.00
23	14	..	..	14	3,625.00	18.50
24	12	1	..	12	4,800.00	175.00
25	6	..	..	6	3,900.00	100.00
26	11	2	..	11	7,400.00	383.88
27	3	..	..	..	722.81	5.00
28	6	..	..	6	2,000.00	40.00
29	15	1	..	14	8,675.00	244.00
30	11	..	..	11	4,925.00	200.00
31	1	..	..	..	500.00	1.00
	286	24	2	335	$775,592.38	$21,792.88

SCHOLARS.

	TOWNS.	Selectmen's enumeration between five and fifteen.		Number of boys enrolled.	Number of girls enrolled.	Under six years.	Between six and sixteen.	Over sixteen years.	Average daily attendance.	Number pursuing higher branches.	Number reported between five and fifteen not attending any school.
		Boys	Girls								
1	Amherst......	...	...	119	98	12	182	23	143	48	2
2	Antrim	102	106	100	110	3	200	7	...	...	..
3	Bedford	114	98	125	101	14	198	14	153	22	5
4	Bennington ..	...	...	39	46	4	73	8	62	2	..
5	Brookline	...	...	46	61	4	95	8	71	10	3
6	Deering......	...	...	61	48	1	98	10	76	24	2
7	Francestown.	...	...	83	75	10	140	8	108	11	5
8	Goffstown	...	...	196	181	10	327	40	268	40	50
9	Greenfield....	...	...	69	60	3	120	7	88	10	..
10	Greenville ...	...	...	104	101	13	191	1	124	22	..
11	Hancock......	64	59	58	55	8	98	7	90	...	5
12	Hillsborough.	121	138	206	193	41	305	39	316	11	..
13	Hollis.........	...	...	115	89	4	194	21	...	57	..
14	Hudson	...	...	108	98	20	169	17	138	21	13
15	Litchfield.....	26	14	24	18	1	36	5	35	7	..
16	Lyndeboro'...	67	49	76	63	8	116	15	76	19	2
17	Manchester...	...	...	1,957	1,920	397	3,299	181	2,833	243	..
18	Mason	43	38	64	70	21	97	16	89	5	1
19	Merrimack'...	89	65	91	91	12	164	6	110	13	..
20	Milford........	219	187	264	251	30	432	53	31	266	17
21	Mont Vernon.	48	40	53	56	12	95	2	71	6	8
22	Nashua........	...	...	844	856	223	2,008	136	1,652	177	100
23	New Boston..	82	81	98	108	14	168	21	171	55	1
24	New Ipswich.	110	80	109	82	7	175	7	111	27	8
25	Pelham........	69	76	90	75	4	153	8	138	...	7
26	Peterborough	...	...	208	198	16	405	23	....	...	..
27	Sharon........	19	12	29	13	6	30	6	40	5	..
28	Temple	43	54	52	42	6	86	2	65	20	..
29	Weare.........	...	...	166	125	18	248	25	192	60	15
30	Wilton........	122	112	163	155	2	288	28	216	35	12
31	Windsor......	...	...	2	3	3	....	2	1	...	2
	Totals......	1,338	1,209	5,719	5,442	927	10,190	746	7,468	1,216	258

COUNTY.

TEACHERS.

	Number of different male teachers employed.	Average wages of male teachers per month.	Number of different female teachers employed.	Average wages of female teachers per month.	Number teaching the first time.	Number teaching the same school more than one term.	Number of teachers from normal schools.
1	1	$40.00	13	$28.42	1	10	1
2	..	......	10	29.00	1	6	1
3	..	......	19	25.00	5	7	..
4	..	......	2	30.00	..	2	..
5	1	40.00	5	33.00	..	4	..
6	1	24.00	11	24.45	2	1	1
7	1	30.00	9	24.11	1	5	..
8	5	37.00	16	23.80	3	10	2
9	..	......	8	27.83	..	4	1
10	..	......	6	32.00	1	5	1
11	3	20.00	8	21.50	6	4	..
12	2	47.50	26	18.95	6	7	1
13	3	49.00	11	27.50	1	9	1
14	1	29.33	10	26.29	5	6	2
15	..	......	3	28.10	..	3	1
16	2	27.00	8	24.47	2	3	1
17	13	135.00	87	40.00	6	77	4
18	1	32.00	6	30.00	..	5	2
19	..	......	17	25.98	2	8	2
20	1	111.12	17	34.63	3	12	1
21	1	40.00	4	22.60	1	4	1
22	6	36.67	66	34.42	2	65	8
23	1	24.00	17	22.60	3	5	..
24	3	26.75	8	25.00	3	7	1
25	1	36.00	8	35.00	1	4	2
26	1	106.00	10	28.00	2	9	1
27	..	......	7	15.80	3	1	..
28	..	......	10	23.66	2	2	..
29	3	29.25	20	23.38	2	9	3
30	2	71.18	13	29.06	..	9	3
31	..	......	2	18.00	1	..	..
	53	$47.22	457	$26.53	65	303	41

HILLSBOROUGH

REVENUE.

	TOWNS.	Amount raised by town tax for support of schools.	Amount raised by district tax for schools.	Literary fund.	Local funds and dog tax.	Railroad tax.	Contributed.	Entire amount of revenue.
1	Amherst.....	$3,100.00	....	$144.00	$56.00	......	......	$3,300.00
2	Antrim.......	1,246.00	....	131.12	93.39	......	$9.00	1,479.51
3	Bedford......	1,735.50	....	160.00	135.65	$42.18	......	2,073.33
4	Bennington .	420.00	$150.00	51.84	......	......	32.00	653.84
5	Brookline ...	549.50	2,158.00	76.80	......	......	......	2,784.30
6	Deering......	512.00	....	79.30	60.00	......	66.00	717.30
7	Francestown	995.92	....	111.26	10.50	......	......	1,117.68
8	Goffstown....	2,317.00	100.00	222.08	......	......	7.50	2,646.58
9	Greenfield...	569.00	....	73.20	......	......	15.00	657.20
10	Greenville...	1,200.00	....	132.48	26.00	......	......	1,358.48
11	Hancock.....	900.00	....	72.00	......	......	19.00	991.00
12	Hillsborough	1,466.00	1,955.00	229.76	78.00	......	9.57	3,738.33
13	Hollis........	2,451.32	55.00	120.00	599.78	25.57	......	3,251.67
14	Hudson.. ...	2,197.00	400.00	110.08	18.23	......	14.00	2,739.31
15	Litchfield....	539.00	....	28.16	......	......	......	567.16
16	Lyndeboro' .	804.50	....	98.21	24.00	43.53	......	970.24
17	Manchester..	55,733.55	....	2,619.52	167.35	......	......	58,520.42
18	Mason........	808.04	....	76.86	530.70	......	......	1,415.60
19	Merrimack ..	1,816.19	1,000.00	118.95	712.32	......	......	3,647.46
20	Milford	5,000.00	....	325.12	131.00	......	65.00	5,521.12
21	Mont Vernon	1,000.00	....	62.83	......	......	......	1,062.83
22	Nashua.......	18,728.50	16,100.00	1,657.60	863.00	......	270.85	37,619.95
23	New Boston.	1,414.00	....	135.88	72.00	......	......	1,621.88
24	New Ipswich	1,500.00	....	150.40	78.93	......	......	1,729.33
25	Pelham.......	1,400.00	....	108.58	115.00	......	......	1,623.58
26	Peterboro'...	2,943.00	....	50.76	107.50	......	......	3,101.26
27	Sharon.......	300.00	....	19.84	25.00	......	25.00	369.84
28	Temple	700.00	....	51.20	64.00	......	......	815.20
29	Weare........	1,823.50	....	195.20	258.15	150.89	......	2,427.74
30	Wilton	3,000.00	....	181.12	......	......	......	3,181.12
31	Windsor......	89.50	....	3.05	3.00	......	......	95.55
	Totals.....	$117,259.02	$21,918.00	$7,597.20	$4,229.50	$262.17	$532.92	$151,798.81

COUNTY.

EXPENDITURES.

	Expended for new buildings.	Interest and debt.	Permanent repairs.	Miscellaneous expenses.	Teachers' salaries.	Total expended.*	Average cost of miscellaneous and salaries per scholar.
1	....	....	$225.62	$386.10	$2,697.00	$3,471.47	$13.96
2	....	....	7.74	155.90	1,310.00	1,623.64	7.00
3	....	....	....	260.13	1,813.20	2,185.33	9.02
4	....	....	150.00	104.00	423.55	702.55	6.21
5	$1,658.00	$1,287.00	....	139.50	963.00	4,097.50	10.33
6	....	....	....	2.26	670.67	725.43	6.08
7	....	....	41.57	145.34	1,113.50	1,400.41	7.96
8	....	....	750.00	301.35	2,345.23	3,482.58	6.69
9	....	....	28.88	79.68	669.60	838.16	6.22
10	....	....	....	193.10	1,271.00	1,513.60	7.14
11	....	....	....	69.41	703.00	832.41	6.83
12	....	2,352.00	55.00	412.70	2,254.50	5,074.20	6.68
13	....	....	25.00	70.00	2,139.00	2,389.00	12.02
14	1,000.00	....	....	130.18	1,520.22	2,710.40	8.02
15	....	....	....	52.94	496.50	574.44	13.81
16	....	....	....	84.00	874.00	1,047.75	7.46
17	....	....	4,673.00	10,078.10	41,689.32	58,520.42	13.75
18	....	....	37.24	138.82	1,266.67	1,515.23	8.54
19	991.09	....	223.78	300.66	1,995.08	3,638.61	13.89
20	....	....	293.59	758.97	4,214.28	5,516.84	9.39
21	....	....	....	49.06	703.35	812.41	.43
22	....	....	387.43	9,666.46	26,496.99	38,068.88	12.30
23	....	....	....	207.87	1,268.30	1,566.17	7.16
24	....	....	....	223.15	1,364.00	1,697.15	8.00
25	....	....	10.00	87.18	1,278.00	1,435.18	8.54
26	....	....	....	479.07	2,534.72	3,073.79	....
27	....	....	....	49.00	313.00	393.00	6.24
28	....	....	....	....	754.50	784.50	8.77
29	....	....	....	320.85	2,068.87	2,529.47	8.30
30	....	....	46.72	439.26	2,534.58	3,170.56	9.35
31	....	....	....	5.00	76.50	88.50	....
	$3,649.09	$3,639.00	$6,955.57	$25,390.04	$109,822.13	$155,479.58	$8.62

* Salaries of school committees included.

MERRIMACK

SCHOOLS.

	TOWNS.	Legally organized school districts.	Different public schools.	Graded schools.	District and town high schools.	Schools averaging twelve scholars or less.	Schools averaging six or less.	Average length of schools in weeks.
1	Allenstown	1	6	3	..	3	2	17.33
2	Andover	2	10	..	..	5	..	23.00
3	Boscawen	2	8	8	..	1	..	29.70
4	Bow	1	9	..	..	4	1	19.00
5	Bradford	2	9	1	..	3	..	20.82
6	Canterbury	1	9	..	..	5	1	22.00
7	Chichester	1	6	..	..	1	..	27.66
8	Concord	5	53	41	2	6	..	34.00
9	Danbury	1	7	..	..	2	1	24.86
10	Dunbarton	1	6	..	..	3	..	26.90
11	Epsom	1	8	..	..	3	..	20.17
12	Franklin	1	18	10	1	2	..	31.41
13	Henniker	1	10	2	..	5	1	26.79
14	Hill	1	4	..	..	..	1	21.43
15	Hooksett	1	7	2	..	1	..	27.43
16	Hopkinton	1	14	..	..	4	..	26.00
17	Loudon	1	12	..	..	6	1	19.83
18	Newbury	1	11	..	..	4	5	19.38
19	New London	1	7	..	..	2	1	25.20
20	Northfield	1	8	..	..	3	2	15.62
21	Pembroke	1	11	5	..	1	..	32.00
22	Pittsfield	1	10	5	1	1	..	29.00
23	Salisbury	1	6	..	..	1	1	20.16
24	Sutton	1	9	..	..	3	2	23.66
25	Warner	1	18	..	1	10	5	22.20
26	Webster	1	5	..	..	1	1	23.33
27	Wilmot	1	13	..	..	4	2	12.77
	Totals	34	294	77	5	84	27	23.76

COUNTY.

SCHOOLHOUSES.

	Number of schoolhouses.	Unfit for use.	Built during the year.	Having maps or globes.	Estimated value of school buildings, furniture, and sites.	Estimated value of apparatus.
1	4	..	..	6	$7,000.00	$20.00
2	11	4	..	10	3,000.00	50.00
3	8	1	..	8	7,200.00	175.00
4	13	3	..	13	1,800.00	40.00
5	10	..	..	3	2,088.61	70.46
6	11	..	..	11	3,697.23	287.00
7	6	..	..	6	2,500.00	175.00
8	30	..	..	50	200,000.00	3,500.00
9	7	3	..	..	1,400.00	10.00
10	11	4	..	6	2,196.63	75.00
11	9	..	..	3	3,175.14	52.00
12	10	..	..	18	5,200.00	1,100.00
13	11	2	..	9	8,375.00	135.00
14	8	6	..	1	6,800.00	....
15	7	1	..	7	5,000.00	100.00
16	17	1	..	17	4,419.17	300.00
17	12	1	..	6	4,038.00	50.00
18	9	2	..	3	....	29.00
19	7	..	..	7	2,133.49	85.00
20	8	..	..	8	1,625.00	125.00
21	8	1	1	8	8,083.00	250.00
22	10	2	..	10	3,000.00	40.00
23	10	5	..	4	2,250.00	50.00
24	12	3	..	7	2,400.00	75.00
25	22	4	..	22	2,426.00	250.00
26	9	..	..	1	1,700.00	....
27	13	3	..	2	1,600.00	50.00
	293	46	1	246	$293,107.27	$4,093.46

MERRIMACK

SCHOLARS.

	TOWNS.	Selectmen's enumeration between five and fifteen.		Number of boys enrolled.	Number of girls enrolled.	Under six years.	Between six and sixteen.	Over sixteen years.	Average daily attendance.	Number pursuing higher branches.	Number reported between five and fifteen not attending any school.
		Boys	Girls								
1	Allenstown....	....	....	87	65	18	133	1	84	7	....
2	Andover........	....	....	96	100	13	168	15	152	16	8
3	Boscawen......	38	46	102	112	40	154	20	160	44	10
4	Bow	....	....	68	43	12	89	10	99	17	....
5	Bradford	63	64	90	83	6	135	32	135	9	1
6	Canterbury.....	67	76	93	106	7	177	15	127	65	1
7	Chichester......	44	56	87	85	12	136	24	105	18	....
8	Concord	....	....	1,257	1,288	186	2,140	219	1,830	250	42
9	Danbury........	....	....	85	73	9	138	11	128	16	....
10	Dunbarton	....	....	64	53	8	99	10	83	6	3
11	Epsom..........	68	63	94	77	5	143	23	130	64	3
12	Franklin	....	....	380	355	38	673	24	495	60	50
13	Henniker.......	81	75	115	90	12	184	19	130	....	7
14	Hill..	51	54	59	54	4	99	10	74	2	5
15	Hooksett.......	134	119	131	112	21	215	7	156	24	40
16	Hopkinton......	....	....	156	127	28	208	47	179	15	....
17	Loudon.........	....	....	120	134	20	203	31	166	40	....
18	Newbury	43	39	51	53	9	84	11	83	24	3
19	New London...	....	....	76	80	8	133	15	109	6	....
20	Northfield......	66	88	85	79	12	150	2	82	23	1
21	Pembroke......	198	237	220	205	44	371	10	248	17	20
22	Pittsfield	....	....	239	180	12	360	47	271	35	55
23	Salisbury.......	....	.. .	81	62	7	110	26	101	24	5
24	Sutton..........	73	55	94	81	14	138	23	120	30	....
25	Warner.........	....	....	137	126	12	242	6	191	20	1
26	Webster........	33	31	50	49	5	75	20	66	42	4
27	Wilmot.........	....	....	116	101	14	180	22	158	35	....
	Totals	759	1,003	4,233	3,973	576	6,937	700	5,662	909	254

COUNTY.

TEACHERS.

	Number of different male teachers employed.	Average wages of male teachers per month.	Number of different female teachers employed.	Average wages of female teachers per month.	Number teaching the first time.	Number teaching the same school more than one term.	Number of teachers from normal schools.
1	..	......	7	$27.86	1	4	2
2	..	......	14	25.08	1	6	2
3	1	$30.00	12	29.10	..	7	4
4	1	24.00	11	23.00	4	3	1
5	2	27.16	9	18.50	1	..	..
6	2	23.00	8	23.60	2	6	..
7	1	35.00	8	24.98	1	5	1
8	5	113.75	59	40.00	4	48	3
9	4	27.25	11	22.45	..	6	1
10	..	......	7	25.87	1	5	1
11	1	40.00	13	21.88	4	3	1
12	1	166.66	27	34.30	5	20	11
13	..	......	17	26.20	3	14	3
14	1	20.00	4	25.00	1	3	1
15	..	......	10	30.66	2	6	3
16	5	35.00	17	25.00	..	9	4
17	3	41.33	12	21.11	..	2	..
18	2	32.50	18	16.43	2	3	1
19	2	28.00	11	25.00	..	4	1
20	2	21.00	11	18.30	4	2	1
21	..	......	11	28.25	..	11	2
22	10	37.66	7	27.00	2	8	..
23	2	35.00	9	21.66	..	1	3
24	..	......	14	17.60	3	7	..
25	8	21.33	23	19.00	6	7	..
26	..	......	7	24.06	..	2	1
27	1	25.20	14	16.30	2	3	..
	49	$41.25	170	$24.38	49	195	47

MERRIMACK

REVENUE.

	TOWNS.	Amount raised by town tax for support of schools.	Amount raised by district tax for schools.	Literary fund.	Local funds and dog tax.	Railroad tax.	Contributed.	Entire amount of revenue.
1	Allenstown....	$1,400.00	....	$131.84	....	......	.....	$1,531.84
2	Andover	2,028.00	....	....	....	......	......	2,028.00
3	Boscawen. ...	1,875.00	$800.00	161.28	$32.00	$100.00	$50.00	3,018.28
4	Bow...........	941.02	....	94.72	....	......	37.43	1,073.17
5	Bradford	922.42	....	112.85	66.00	......	68.00	1,169.27
6	Canterbury....	1,090.00	....	144.00	56.00	......	1.00	1,291.00
7	Chichester.....	1,112.51	....	111.35	....	......	58.29	1,282.15
8	Concord........	22,225.00	11,891.67	1,649.00	365.50	......	......	36,131.17
9	Danbury.......	700.00	60.07	104.96	42.00	211.58	......	1,118.61
10	Dunbarton	970.20	....	84.18	....	......	19.25	1,073.63
11	Epsom.........	700.00	....	122.88	....	169.80	57.00	1,049.68
12	Franklin	10,620.66	....	468.48	. ...	......	......	11,089.14
13	Henniker......	1,850.00	....	104.32	....	......	......	1,954.32
14	Hill	371.00	250.00	67.84	....	......	......	688.84
15	Hooksett.......	1,445.50	....	142.08	179.00	......	......	1,766.58
16	Hopkinton	2,230.41	....	184.00	....	......	9.00	2,423.41
17	Loudon........	1,391.00	... .	165.76	94.07	......	......	1,650.83
18	Newbury	800.00	....	70.15	111.50	......	......	981.65
19	New London..	978.76	....	106.24	....	......	21.89	1,106.89
20	Northfield.....	606.67	....	33.33	....	......	......	640.00
21	Pembroke.....	2,688.28	800.00	225.00	....	......	129.48	3,842.76
22	Pittsfield	3,000.00	....	236.80	....	......	......	3,236.80
23	Salisbury......	679.00	....	102.40	18.00	17.10	......	816.50
24	Sutton	742.00	....	109 19	180.00	......	32.54	1,063.73
25	Warner........	1,645.00	....	165.92	36.78	......	......	1,847.70
26	Webster........	689.50	....	59.52	19.50	......	......	768.52
27	Wilmot........	581.00	....	139.69	22.00	......	11.25	753.94
	Totals	$64,282.93	$13,801.74	$5,097.78	$1,222.35	$498.48	$495.13	$85,398.41

COUNTY.

EXPENDITURES.

	Expended for new buildings.	Interest and debt.	Permanent repairs.	Miscellaneous expenses.	Teachers' salaries.	Total expended.*	Average cost of miscellaneous and salaries per scholar.
1	....	....	....	$103.08	$754.00	$857.08	$5.64
2	....	....	....	149.83	1,442.75	1,692.58	8.14
3	....	$600.00	$155.00	138.70	2,300.50	3,194.20	14.92
4	....	4.06	10.08	79.49	941.50	1,112.03	9.33
5	....	....	4.22	97.43	576.33	729.48	6.20
6	....	....	....	484.35	806.25	1,290.60	6.48
7	....	....	....	54.93	1,086.75	1,241.68	7.33
8	....	....	696.50	1,911.62	25,075.67	27,683.79	10.60
9	....	....	....	....	946.85	996.85	6.32
10	....	....	....	85.53	988.10	1,175.63	9.11
11	....	....	1.45	93.66	901.95	1,059.06	5.82
12	....	....	1,951.86	1,629.79	6,451.80	10,283.45	10.99
13	....	....	....	....	1,794.00	1,898.00	......
14	....	....	....	27.18	584.90	659.88	5.42
15	....	....	173.41	71.00	1,489.00	1,820.41	6.38
16	....	....	....	174.00	2,140.80	2,489.80	8.20
17	....	....	....	319.10	1,159.37	1,579.77	6.23
18	....	....	36.36	46.08	872.90	1,013.33	8.51
19	....	....	....	90.33	916.33	1,069.16	7.43
20	....	....	....	35.01	587.50	672.51	5.60
21	$800.00	....	103.08	385.96	2,504.00	3,968.04	6.07
22	....	....	....	406.68	2,846.15	3,402.83	7.75
23	....	....	....	84.86	732.50	882.36	5.72
24	....	....	....	81.72	962.00	1,113.72	5.96
25	....	....	....	116.60	1,777.50	1,999.10	7.69
26	....	....	....	....	698.00	698.00	7.80
27	....	7.50	....	10.85	727.50	785.85	3.40
	$800.00	$611.56	$3,131.96	$6,677.78	$62,064.90	$75,369.29	$7.42

*Salaries of school committees included.

SCHOOLS.

	TOWNS.	Legally organized school districts.	Different public schools.	Graded schools.	District and town high schools.	Schools averaging twelve scholars or less.	Schools averaging six or less.	Average length of schools in weeks.
1	Atkinson	1	5	..	..	4	..	16.40
2	Auburn	1	7	..	..	3	..	23.01
3	Brentwood	1	5	..	..	1	..	26.30
4	Candia	1	9	..	..	..	..	24.00
5	Chester	1	9	..	..	3	1	18.33
6	Danville	1	3	..	..	..	..	21.30
7	Deerfield	1	12	..	1	1	..	22.05
8	Derry	2	11	..	..	..	1	23.00
9	East Kingston	1	4	..	..	..	..	26.25
10	Epping	1	9	3	1	3	..	19.55
11	Exeter	1	12	9	1	2	..	34.33
12	Fremont	1	4	..	..	..	..	30.00
13	Greenland	1	4	..	1	1	..	34.25
14	Hampstead	1	7	..	1	2	..	28.57
15	Hampton	1	5	1	1	1	..	33.00
16	Hampton Falls	1	4	..	..	1	..	31.75
17	Kensington	1	3	..	..	..	..	26.00
18	Kingston	1	5	..	..	..	..	25.00
19	Londonderry	1	9	..	..	2	..	25.30
20	Newcastle	2	2	2	..	..	..	33.00
21	Newington	1	1	..	..	..	..	34.00
22	Newmarket	1	11	6	1	11	..	32.00
23	Newton	1	6	..	..	1	..	23.86
24	North Hampton	1	3	1	..	..	..	33.00
25	Northwood	1	7	..	..	4	..	27.00
26	Nottingham	1	11	..	..	3	1	17.54
27	Plaistow	1	4	..	..	..	..	20.25
28	Portsmouth	1	31	28	1	..	..	40.00
29	Raymond	1	8	2	..	3	2	19.00
30	Rye	1	4	..	..	..	..	30.50
31	Salem	1	10	2	..	3	..	23.60
32	Sandown	1	4	..	..	4	..	19.00
33	Seabrook	1	7	1	..	1	..	27.00
34	South Hampton	1	3	..	..	3	..	30.00
35	South Newmarket	1	4	3	..	..	..	31.80
36	Stratham	1	4	..	..	..	..	31.00
37	Windham	1	6	..	..	3	..	16.00
	Totals	39	253	58	8	60	5	26.41

COUNTY.

SCHOOLHOUSES.

	Number of schoolhouses.	Unfit for use.	Built during the year.	Having maps or globes.	Estimated value of school buildings, furniture, and sites.	Estimated value of apparatus.
1	5	..	..	5	$3,000.00	$40.00
2	8	..	..	8	2,050.00	100.00
3	5	..	..	5	3,225.00	30.00
4	14	2	..	14	3,225.00	85.00
5	10	1	..	9	6,430.00	100.00
6	4	1	..	3	1,225.00	30.00
7	14	5	..	14	5,000.00	100.00
8	11	..	..	11	5,475.00	160.00
9	4	..	..	4	600.00	......
10	9	1	..	9	4,200.00	53.00
11	10	..	..	10	11,000.00	500.00
12	4	..	..	4	1,600.00	75.00
13	4	..	..	4	6,000.00	300.00
14	7	..	..	7	3,400.00	100.00
15	6	..	..	6	10,000.00	150.00
16	4	..	..	4	6,000.00	75.00
17	3	..	..	3	2,650.00	50.00
18	5	1	..	5	3,000.00	75.00
19	9	..	..	7	2,745.44	102.00
20	2	..	..	1	2,000.00	50.00
21	1	..	..	1	2,500.00	25.00
22	8	..	..	8	20,645.98	200.00
23	6	..	..	6	2,265.00	30.00
24	2	..	..	3	4,900.00	100.00
25	8	1	..	4	1,700.00	50.00
26	12	1	..	5	3,500.00	50.00
27	4	..	..	4	2,700.00	25.00
28	13	..	..	28	45,300.00	......
29	9	1	..	9	4,541.47	200.00
30	4	..	..	4	6,100.00	150.00
31	10	..	..	..	8,800.00	20.00
32	4	..	..	4	515.00	25.00
33	6	2	..	4	4,650.00	100.00
34	3	1	..	3	1,600.00	20.82
35	3	..	..	3	3,000.00	90.00
36	4	..	..	4	6,000.00	100.00
37	7	1	..	6	5,746.80	100.00
	242	18	..	229	$207,289.69	$3,460.82

ROCKINGHAM

SCHOLARS.

	TOWNS.	Selectmen's enumeration between five and fifteen.		Number of boys enrolled.	Number of girls enrolled.	Under six years.	Between six and sixteen.	Over sixteen years.	Average daily attendance.	Number pursuing higher branches.	Number reported between five and fifteen not attending any school.
		Boys	Girls								
1	Atkinson.......	...	...	28	39	9	56	2	47	17	..
2	Auburn	55	61	66	72	14	128	11	104	11	9
3	Brentwood	76	45	100	65	7	144	14	92	20	..
4	Candia	...	...	105	95	14	177	9	131	16	..
5	Chester	...	...	91	121	17	173	22	163	36	5
6	Danville	47	51	35	55	7	80	3	67	2	2
7	Deerfield.......	...	...	131	117	26	212	10	265	60	9
8	Derry	189	166	188	177	7	354	4	287	16	9
9	East Kingston.	54	44	66	51	10	101	6	71	5	..
10	Epping.........	...	...	158	162	55	247	18	235	89	16
11	Exeter..........	216	244	273	180	58	377	18	407	65	23
12	Fremont.......	...	...	72	66	..	133	5	88	10	6
13	Greenland.....	37	42	57	66	3	101	19	79	35	..
14	Hampstead....	79	75	91	76	22	143	2	105	8	2
15	Hampton	65	67	85	85	8	147	20	24	44	4
16	Hampton Falls	58	58	61	64	17	106	2	72	18	..
17	Kensington	50	45	52	45	3	89	5	76	32	1
18	Kingston.......	87	103	81	100	11	166	4	128	17	18
19	Londonderry..	106	101	117	97	20	162	12	140	86	8
20	Newcastle	30	37	34	38	8	57	5	92	31	..
21	Newington.....	24	31	35	32	4	55	8	41	11	..
22	Newmarket....	...	...	219	231	42	396	12	48	...	..
23	Newton	...	...	78	76	15	138	1	116	...	20
24	N. Hampton...	64	71	59	58	5	109	3	88	17	20
25	Northwood	...	...	89	98	12	169	6	140	46	1
26	Nottingham....	103	63	142	99	11	211	19	177	15	..
27	Plaistow.......	...	...	87	40	9	118	..	107	10	..
28	Portsmouth ...	...	...	846	800	102	1,470	96	1,178	163	..
29	Raymond......	103	106	89	96	23	160	6	136	11	1
30	Rye......... ...	...	...	81	92	11	133	29	116	36	6
31	Salem	126	144	124	148	25	240	7	100	8	1
32	Sandown.......	42	34	39	42	9	65	7	60	3	4
33	Seabrook	...	...	167	115	83	181	18	200	13	11
34	S. Hampton....	24	16	27	21	3	42	3	30	10	41
35	S. Newmarket.	...	...	74	76	16	128	6	120	19	..
36	Stratham	...	...	54	62	12	97	7	86	15	5
37	Windham......	...	..	60	56	13	97	6	86	20	2
	Totals......	1,635	1,604	4,161	3,913	711	6,862	425	5,502	1,015	224

COUNTY.

TEACHERS.

	Number of different male teachers employed.	Average wages of male teachers per month.	Number of different female teachers employed.	Average wages of female teachers per month.	Number teaching the first time.	Number teaching the same school more than one term.	Number of teachers from normal schools.
1	..	......	5	$24.00	..	2	..
2	..	......	10	20.44	2	6	..
3	..	......	6	27.00	..	2	2
4	2	$24.00	11	22.71	2	4	1
5	1	50.00	12	19.20	1	7	1
6	..	......	4	24.76	1	2	..
7	1	14.00	11	24.00	1	8	2
8	1	32.00	11	26.72	2	9	1
9	..	......	5	28.00	..	4	..
10	1	60.00	10	28.60	1	7	3
11	2	144.44	12	37.84	1	9	1
12	..	......	7	27.00	2	4	1
13	..	......	4	36.00	..	4	..
14	..	......	8	25.37	4	7	..
15	1	36.00	5	23.20	1	4	1
16	..	......	5	32.00	..	4	1
17	1	36.00	2	26.00	..	2	..
18	..	......	9	28.60	1	4	1
19	..	......	14	26.00	2	7	2
20	..	......	2	30.00	..	2	1
21	1	60.00	1	40.00	..	1	..
22	2	40.00	10	40.00	..	6	..
23	..	......	8	24.00	2	2	..
24	..	......	4	36.00	..	3	2
25	1	32.00	8	28.25	1	2	..
26	2	24.56	14	21.80	5	7	1
27	..	......	4	30.50	..	4	2
28	4	115.00	37	32.50	4	29	3
29	1	39.00	8	25.12	1	5	3
30	..	......	5	39.75	..	4	3
31	..	......	13	27.30	3	7	3
32	..	......	6	23.50	1	3	1
33	3	38.00	6	25.00	2	2	..
34	..	......	5	23.33	3	3	2
35	1	35.00	4	43.50	..	5	1
36	..	......	4	32.00	..	4	..
37	..	......	8	26.00	1	2	..
	25	$48.75	198	$28.54	44	187	39

ROCKINGHAM

REVENUE.

	TOWNS.	Amount raised by town tax for support of schools.	Amount raised by district tax for schools.	Literary fund.	Local funds and dog tax.	Railroad tax.	Contributed.	Entire amount of revenue.
1	Atkinson......	$549.50	....	$39.68	$43.00	$65.82	......	$698.00
2	Auburn........	739.00	....	99.20	47.00	......	$26.07	911.27
3	Brentwood....	616.00	....	98.56	56.50	......	......	771.06
4	Candia.........	1,200.00	$200.00	132.48	....	......	85.54	1,618.02
5	Chester.... ...	1,192.00	4.50	132.37	132.00	......	......	1,460.87
6	Danville.......	350.00	....	52.48	....	......	......	402.48
7	Deerfield......	1,600.00	... .	167.00	30.00	......	......	1,797.00
8	Derry..........	1,624.00	....	239.36	137.23	......	......	2,000.59
9	East Kingston	427.00	....	60.16	242.00	23.00	......	752.16
10	Epping........	1,251.04	....	152.96	6.00	......	......	1,410.00
11	Exeter..... ...	6,212.00	....	304.64	....	476.38	90.00	7,083.02
12	Fremont.......	820.14	34.30	.... ..	....	......	......	854.44
13	Greenland.....	1,422.50	....	65.92	....	......	......	1,488.42
14	Hampstead ...	1,200.35	....	93.94	110.48	......	......	1,404.77
15	Hampton......	1,595.00	....	114.56	....	90.44	.....	1,800.00
16	Hampton Falls	1,000.00	....	81.28	19.00	......	......	1,100.28
17	Kensington ...	625.00	....	65.92	....	......	......	690.92
18	Kingston......	724.30	....	132.48	75.60	......	......	932.38
19	Londonderry.	1,330.00	... .	145.18	112.00	......	......	1,587.18
20	Newcastle.....	725.00	....	54.04	....	10.80	......	789.84
21	Newington....	399.00	....	46.08	2.00	......	25.00	472.08
22	Newmarket...	3,796.00	....	269.62	....	......	......	4,065.62
23	Newton........	824.00	....	94.72	....	......	......	918.72
24	N. Hampton ..	996.00	109.33	71.04	....	......	......	1,176.37
25	Northwood....	984.32	... .	132.48	88.00	......	75.00	1,279.80
26	Nottingham...	714.00	....	145.79	290.14	......	.....	1,149.93
27	Plaistow.......	497.00	....	95.36	40.00	......	......	632.36
28	Portsmouth...	19,524.00	....	1,262.72	960.25	......	......	21,746.97
29	Raymond.. ...	1,050.00	300.00	160.24	75.62	......	......	1,585.86
30	Rye............	1,507.32	... .	124.16	....	.. ...	......	1,631.48
31	Salem..........	962.50	200.00	165.12	184.34	522.86	445.26	2,480.08
32	Sandown......	304.50	100.00	51.85	....	......	......	456.35
33	Seabrook......	1,500.00	....	275.00	....	......	......	1,775.00
34	S. Hampton...	500.00	9.76	24.96	....	......	......	534.72
35	S. Newmarket	843.50	680.98	98.56	....	......	19.20	1,642.24
36	Stratham......	1,223.50	....	78.08	25.63	......	......	1,327.21
37	Windham.....	633.50	....	71.04	200.00	......	......	904.54
	Totals.....	$61,461.97	$1,638.87	$5,399.03	$2,876.89	$1,189.30	$766.07	$73,332.13

COUNTY.

EXPENDITURES.

	Expended for new buildings.	Interest and debt.	Permanent repairs.	Miscellaneous expenses.	Teachers' salaries.	Total expended.*	Average cost of miscellaneous and salaries per scholar.
1	....	....	....	$23.94	$694.40	$748.34	$0.36
2	....	....	....	65.55	835.35	1,000.90	6.53
3	....	....	....	46.90	726.00	802.90	4.68
4	$20.00	....	$180.00	187.32	1,230.70	1,684.02	7.09
5	....	....	....	98.66	1,326.10	1,484.76	6.31
6	....	....	....	11.88	401.00	432.88	4.58
7	....	....	....	97.00	1,772.00	1,887.00	7.00
8	....	....	....	208.07	1,791.60	2,080.17	5.37
9	....	....	42.00	79.98	729.75	876.73	6.92
10	....	....	....	71.95	1,364.50	1,536.45	4.17
11	....	....	185.43	800.28	5,877.00	7,012.71	14.74
12	....	....	....	14.76	800.21	844.97	6.19
13	....	....	55.14	197.98	1,281.00	1,534.12	12.02
14	....	....	20.21	84.90	1,270.00	1,451.11	8.15
15	....	....	....	133.95	1,608.00	1,771.95	8.20
16	....	....	....	101.73	1,002.00	1,128.73	8.95
17	....	....	52.00	....	572.00	654.00	7.17
18	....	....	....	82.67	898.50	1,051.17	5.33
19	....	....	30.83	103.38	1,418.90	1,663.61	7.11
20	....	....	125.00	....	495.00	645.00	9.84
21	....	....	5.50	37.50	410.00	466.00	6.00
22	....	....	63.91	....	4,164.55	4,298.46	9.08
23	....	....	....	50.40	850.40	950.80	5.85
24	15.00	....	86.94	160.08	882.00	1,162.02	8.90
25	....	....	33.34	85.50	1,127.00	1,321.84	6.48
26	....	....	....	41.68	1,094.50	1,205.68	4.71
27	....	....	....	50.53	620.00	700.53	5.32
28	....	....	2,632.40	3,709.96	16,489.20	22,898.23	12.31
29	....	....	261.09	39.62	1,148.14	1,508.85	7.54
30	....	....	49.30	194.91	1,239.25	1,543.46	8.29
31	....	....	77.00	179.09	1,864.70	2,253.79	7.14
32	....	....	....	5.90	446.50	452.40	5.58
33	....	....	7.25	203.20	1,474.80	1,720.25	5.10
34	....	....	....	48.72	489.00	565.02	10.46
35	....	....	181.10	152.14	1,249.00	1,642.24	9.34
36	58.44	$320.00	113.56	413.61	992.00	1,961.81	12.11
37	....	....	....	4.45	670.05	729.50	11.34
	$93.44	$320.00	$4,202.00	$7,788.19	$61,305.10	$75,672.40	$7.49

* Salaries of school committees included.

STRAFFORD

SCHOOLS.

	TOWNS.	Legally organized school districts.	Different public schools.	Graded schools.	District and town high schools.	Schools averaging twelve scholars or less.	Schools averaging six or less.	Average length of schools in weeks.
1	Barrington.......	1	11	..	..	1	..	22.00
2	Dover............	1	39	29	1	2	..	35.30
3	Durham..........	1	5	..	..	3	..	22.40
4	Farmington......	2	16	4	1	1	1	31.40
5	Lee	1	5	..	..	1	..	24.00
6	Madbury	1	3	..	..	..	..	33.00
7	Middleton........	1	3	..	..	2	..	19.30
8	Milton............	1	11	4	2	2	..	21.80
9	New Durham.....	1	8	..	..	4	..	18.40
10	Rochester	1	33	20	..	3	5	32.40
11	Rollinsford.......	2	8	4	1	1	..	34.50
12	Somersworth.....	2	15	11	1	2	..	34.11
13	Strafford	1	14	..	1	2	1	20.00
	Totals	16	171	72	7	24	7	26.81

COUNTY.

SCHOOLHOUSES.

	Number of schoolhouses.	Unfit for use.	Built during the year.	Having maps or globes.	Estimated value of school buildings, furniture, and sites.	Estimated value of apparatus.
1	14	..	..	3	$6,000.00	$5.00
2	18	..	..	30	140,000.00	1,600.00
3	8	..	..	8	3,095.53	40.00
4	15	..	..	19	....	700.00
5	8	6	1	1	1,290.00	50.00
6	4	1	..	1	1,810.00	20.00
7	4	2	..	1	500.00	5.00
8	11	2	..	11	6,000.00	30.00
9	13	..	..	13	5,500.00	125.00
10	25	4	..	14	57,820.00	880.50
11	5	..	..	8	9,000.00	100.00
12	8	..	..	15	50,000.00	1,600.00
13	16	5	..	..	5,000.00	50.00
	149	20	1	124	$286,015.53	$5,205.50

SCHOLARS.

	TOWNS.	Selectmen's enumeration between five and fifteen.		Number of boys enrolled.	Number of girls enrolled.	Under six years.	Between six and sixteen.	Over sixteen years.	Average daily attendance.	Number pursuing higher branches.	Number reported between five and fifteen not attending any school.
		Boys	Girls								
1	Barrington.....	....	....	151	140	13	259	19	196	30	....
2	Dover...........	1,016	1,013	803	781	132	1,347	105	1,118	149	150
3	Durham........	....	....	85	66	8	124	19	111	32	19
4	Farmington....	....	....	342	359	20	638	43	660	100	31
5	Lee.............	....	....	70	65	10	112	13	87	19	4
6	Madbury.......	28	19	41	24	2	48	11	46	....	....
7	Middleton......	19	22	25	26	7	41	3	40	24	8
8	Milton..........	....	....	108	148	20	225	11	216	23	2
9	New Durham ..	67	67	79	75	9	133	12	120	27	2
10	Rochester......	....	....	682	650	..	1,246	86	1,203	157	61
11	Rollinsford	163	143	137	122	46	209	4	204	39	....
12	Somersworth ..	307	336	383	425	57	717	34	610	98	300
13	Strafford	143	131	174	149	38	262	23	229	55	3
	Totals	1,743	1,731	3,080	3,030	362	5,361	383	4,840	753	580

COUNTY.

TEACHERS.

	Number of different male teachers employed.	Average wages of male teachers per month.	Number of different female teachers employed.	Average wages of female teachers per month.	Number teaching the first time.	Number teaching the same school more than one term.	Number of teachers from normal schools.
1	1	$24.00	12	$22.00	1	6	..
2	4	97.00	40	40.55	5	38	9
3	3	40.50	7	30.86	3	3	2
4	8	35.00	18	21.00	6	18	..
5	2	32.00	8	29.00	2	3	1
6	..	......	4	24.00	1	3	..
7	..	......	5	22.00	2	1	..
8	3	43.40	12	20.78	5	9	1
9	..	......	9	23.50	..	5	..
10	2	105.55	32	32.56	4	30	1
11	1	100.00	7	34.83	..	8	1
12	2	129.22	19	34.50	1	15	1
13	7	24.66	12	21.66	4	8	..
	33	$63.13	185	$27.48	34	147	16

STRAFFORD

REVENUE.

	TOWNS.	Amount raised by town tax for support of schools.	Amount raised by district tax for schools.	Literary fund.	Local funds and dog tax.	Railroad tax.	Contributed.	Entire amount of revenue.
1	Barrington.....	$1,172.50	....	$181.17	$130.50	......	......	$1,484.17
2	Dover	22,762.50	....	981.76	385.43	......	......	24,129.69
3	Durham	1,330.00	....	182.32	......	......	......	1,512.32
4	Farmington....	2,404.50	....	399.28	......	$269.69	......	3,073.47
5	Lee	2,977.00	$2,200.00	86.62	......	54.38	......	5,318.00
6	Madbury	631.00	....	40.32	11.40	......	......	682.72
7	Middleton......	300.00	85.00	43.92	20.00	......	......	448.92
8	Milton..........	1,035.56	500.00	182.39	67.50	55.47	$49.15	1,890.07
9	New Durham...	476.00	114.73	101.25	224.00	......	29.19	945.17
10	Rochester	5,504.78	9,500.00	736.80	......	200.50	704.00	16,646.08
11	Rollinsford.....	2,272.25	1,200.00	170.24	......	......	......	3,642.49
12	Somersworth ..	7,500.00	4,000.00	546.56	137.12	......	......	12,183.68
13	Strafford	1,550.23	....	172.63	......	......	......	1,722.86
	Totals.......	$49,916.32	$17,599.73	$3,825.26	$975.95	$580.04	$782.34	$73,679.64

COUNTY.

EXPENDITURES.

	Expended for new buildings.	Interest and debt.	Permanent repairs.	Miscellaneous expenses.	Teachers' salaries.	Total expended.*	Average cost of miscellaneous and salaries per scholar.
1	....	....	....	$108.31	$1,357.00	$1,578.31	$5.03
2	....	....	$1,150.00	4,155.90	18,430.05	23,885.95	14.87
3	....	....	54.90	3.72	1,199.00	1,308.87	8.12
4	....	....	933.79	1,079.00	4,680.00	6,952.79	8.15
5	$800.00	....	5.88	39.41	868.00	1,773.39	6.72
6	....	....	....	60.40	588.00	693.40	12.67
7	....	....	83.00	26.02	324.00	460.02	6.86
8	....	....	240.31	35.81	1,568.00	1,988.12	6.26
9	....	....	....	23.02	876.00	956.02	5.95
10	....	$5,963.25	576.19	2,122.09	11,602.96	20,714.49	14.28
11	....	....	....	664.00	2,968.00	3,687.00	14.74
12	....	3,300.00	958.00	915.68	6,650.00	11,883.68	9.43
13	....	....	....	62.05	1,574.00	1,711.55	5.01
	$800.00	$9,263.25	$4,002.07	$9,295.41	$52,685.01	$77,593.59	$9.08

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* Salaries of school committees included.

SULLIVAN

SCHOOLS.

	TOWNS.	Legally organized school districts.	Different public schools.	Graded schools.	District and town high schools.	Schools averaging twelve scholars or less.	Schools averaging six or less.	Average length of schools in weeks.
1	Acworth..........	1	11	2	..	6	1	22.60
2	Charlestown......	2	16	4	1	4	2	25.00
3	Claremont.........	1	22	10	1	5	..	30.87
4	Cornish...........	1	25	..	..	14	4	16.00
5	Croydon...........	1	6	..	..	3	1	22.00
6	Goshen............	1	5	..	..	..	..	18.40
7	Grantham....	1	4	..	..	..	..	18.00
8	Langdon..........	1	5	..	..	5	..	22.00
9	Lempster.........	1	9	..	1	5	2	18.00
10	Newport..........	2	18	7	1	4	1	28.20
11	Plainfield.........	1	11	..	..	3	1	21.70
12	Springfield........	1	9	..	..	6	1	9.84
13	Sunapee...........	1	9	3	..	5	..	19.20
14	Unity..............	1	10	..	..	2	2	17.50
15	Washington.......	1	8	..	..	4	2	17.80
	Totals.........	17	168	26	4	66	17	20.47

COUNTY.

SCHOOLHOUSES.

	Number of schoolhouses.	Unfit for use.	Built during the year.	Having maps or globes.	Estimated value of school buildings, furniture, and sites.	Estimated value of apparatus.
1	13	2	..	11	$4,824.05	$200.00
2	14	3	..	14	....	50.00
3	22	2	..	21	20,160.00	125.00
4	16	2	..	12	4,372.36	60.00
5	6	3	..	1	1,790.00	10.00
6	5	..	..	5	1,000.00	20.00
7	5	1	..	5	600.00	16.00
8	6	1	..	5	1,280.00	75.00
9	9	2	..	9	2,000.00	....
10	17	2	..	10	11,000.00	250.00
11	16	1	1	16	1,828.00	60.00
12	9	3	..	9	1,200.00	50.00
13	9	1	..	9	3,206.65	....
14	11	3	2	5	5,200.00	35.00
15	9	..	..	9	3,700.00	100.00
	167	26	3	141	$62,161.06	$1,051.00

SULLIVAN

SCHOLARS.

	TOWNS.	Selectmen's enumeration between five and fifteen.		Number of boys enrolled.	Number of girls enrolled.	Under six years.	Between six and sixteen.	Over sixteen years.	Average daily attendance.	Number pursuing higher branches.	Number reported between five and fifteen not attending any school.
		Boys	Girls								
1	Acworth........	..	..	84	83	7	142	18	127	21	12
2	Charlestown..,.	..	..	171	127	15	253	30	231	22	7
3	Claremont.....	494	496	389	353	43	678	21	552	118	132
4	Cornish........	..	..	112	86	12	153	33	152	54	..
5	Croydon........	..	..	63	52	13	89	13	71	6	2
6	Goshen.........	50	41	48	50	6	80	12	85	1	2
7	Grantham... ..	..	..	52	51	3	87	13	75	6	3
8	Langdon........	26	26	30	28	3	48	7	44	4	4
9	Lempster.......	42	32	62	53	14	90	11	89	19	..
10	Newport........	..	..	231	255	35	382	69	362	68	13
11	Plainfield......	106	99	133	135	20	225	23	178	24	20
12	Springfield	..	..	64	50	8	90	16	113	2	6
13	Sunapee........	..	..	83	82	16	124	25	137	36	4
14	Unity...........	83	51	83	51	6	117	11	100	53	..
15	Washington....	46	48	55	58	6	100	7	87	18	2
	Totals......	847	793	1,660	1,514	207	2,658	309	2,403	452	207

COUNTY.

TEACHERS.

	Number of different male teachers employed.	Average wages of male teachers per month.	Number of different female teachers employed.	Average wages of female teachers per month.	Number teaching the first time.	Number teaching the same school more than one term.	Number of teachers from normal schools.
1	1	$36.00	15	$21.50	..	7	1
2	4	45.00	18	23.86	8	11	2
3	1	32.00	28	26.00	3	22	6
4	1	32.00	15	18.85	3	3	1
5	1	34.00	9	16.50	2	3	..
6	1	22.00	4	18.24	2	3	..
7	2	31.33	4	19.87	1	4	1
8	..	......	7	23.85	1	3	..
9	..	......	12	16.83	5	2	..
10	2	51.00	27	23.41	5	14	..
11	3	29.93	13	20.36	2	3	2
12	1	26.00	8	18.50	..	..	1
13	2	20.60	11	20.00	..	4	2
14	2	26.00	14	16.88	3	6	..
15	..	......	9	21.25	1	5	2
	21	$32.16	194	$20.39	36	90	18

REVENUE.

	TOWNS.	Amount raised by town tax for support of schools.	Amount raised by district tax for schools.	Literary fund.	Local funds and dog tax.	Railroad tax.	Contributed.	Entire amount of revenue.
1	Acworth......	$1,342.75	$6.00	$108.80	....	......	......	$1,457.55
2	Charlestown..	2,985.00	800.00	203.74	$20.00	......	......	4,008.74
3	Claremont....	5,883.50	2,200.00	529.92	1,830.00	......	......	10,443.42
4	Cornish........	1,276.49	....	113.28	21.39	......	$3.15	1,414.31
5	Croydon.......	409.50	200.00	75.52	64.14	......	......	749.16
6	Goshen........	332.50	....	60.39	83.00	......	......	475.89
7	Grantham.....	301.00	....	75.52	61.59	......	......	438.11
8	Langdon......	700.00	....	41.60	28.40	......	......	770.00
9	Lempster......	599.00	....	75.64	75.42	......	29.16	779.22
10	Newport......	3,943.00	....	333.20	....	......	147.89	4,424.09
11	Plainfield......	1,060.50	800.00	177.28	251.09	$20.21	......	2,309.08
12	Springfield....	315.00	23.15	78.08	44.00	......	......	460.23
13	Sunapee.......	563.50	200.00	109.19	54.83	7.62	30.91	966.05
14	Unity..........	2,432.49	....	95.77	270.25	......	8.00	2,806.51
15	Washington...	688.00	346.76	72.59	73.30	......	78.50	1,259.15
	Totals.....	$22,832.23	$4,575.91	$2,150.52	$2,877.41	$27.83	$297.61	$32,761.51

COUNTY.

EXPENDITURES.

	Expended for new buildings.	Interest and debt.	Permanent repairs.	Miscellaneous expenses.	Teachers' salaries.	Total expended.*	Average cost of miscellaneous and salaries per scholar.
1	....	......	....	$122.40	$1,335.15	$1,557.55	$8.73
2	....	......	$75.00	254.11	3,397.77	3,791.88	1.32
3	....	......	....	952.30	4,615.30	5,717.60	7.51
4	....	......	....	119.31	1,084.71	1,346.62	6.10
5	....	......	....	74.04	597.37	709.41	5.85
6	....	......	....	35.63	438.00	504.63	4.83
7	....	......	....	46.28	391.83	462.95	4.25
8	....	......	....	72.26	655.37	775.38	13.84
9	....	......	....	78.40	680.50	814.78	6.84
10	....	......	....	521.17	3,751.25	4,372.42	8.02
11	$800.00	......	....	99.80	1,205.00	2,291.52	4.98
12	....	......	....	17.67	443.21	497.88	3.94
13	....	......	18.59	202.56	744.90	1,007.05	5.54
14	2,400.00	......	900.00	367.49	475.00	4,142.49	5.44
15	....	$346.76	30.29	48.80	773.30	1,259.15	7.27
	$3,200.00	$346.76	$1,023.88	$3,012.22	$20,588.66	$29,251.31	$5.63

* Salaries of school committees included.

TABLE II.

This table contains, —

1. The largest sum of money appropriated to any one district.
2. The smallest sum appropriated to any one district.
3. The length in weeks of the longest school.
4. The length in weeks of the shortest school.
5. Rate per cent of school assessment upon the invoiced valuation, expressed decimally. Many have failed to report this item; others have evidently reported it incorrectly.

This table exhibits, in a most striking light, some of the inequalities of our school system.

TABLE III.

This table contains, —

1. Number of fractional districts.
2. Number of districts under special acts.
3. Number of different scholars not registered, attending private schools.
4. Number of scholars not absent during the year.
5. Amount of dog tax appropriated to schools.
6. Number of towns employing teachers from normal schools.
7. Amount paid for superintendence.

TABLE No. II.

BELKNAP COUNTY.

	TOWNS.	Largest sum of money in any district.	Smallest sum of money in any district.	Longest school in any district: weeks.	Shortest school in any district: weeks.	Rate of school assessment.
1	Alton..	$230.00	$65.00	22	16	.0032
2	Barnstead..................	150.00	56.00	20	16	.0059
3	Belmont...	160.00	105.00	20	20	.0025
4	Center Harbor	128.99	96.11	21	19	.0017
5	Gilford	175.00	50.00	..	..	.0020
6	Gilmanton.................	159.25	90.00	20	16	.0038
7	Laconia....................	713.92	290.00	36	6	......
8	Meredith..................	375.00	64.22	30	13	.0032
9	New Hampton............	144.92	93.45	22	18	.0038
10	Sanbornton................	166.00	126.00	26	10	.0040
11	Tilton......................	185.00	120.00	24	24	.0020
	Average...............					.0032

TABLE No. III.

BELKNAP COUNTY.

	TOWNS.	Fractional school districts.	Districts under special acts.	Number of different scholars attending private schools.	Number of scholars not absent during the year.	Amount of dog tax appropriated to public schools.	Towns employing teachers from normal schools.	Amount paid for superintendence.
1	Alton	..	..	3	60	......	2	$104.00
2	Barnstead	..	..	..	68	$16.50	..	67.00
3	Belmont	..	..	3	40	30.00	2	123.90
4	Center Harbor	..	..	..	9	......	2	30.00
5	Gilford	..	1	4	26	......	2	180.00
6	Gilmanton	..	..	8	69	104.00	..	145.00
7	Laconia	1	1	20	30	250.00	5	60.00
8	Meredith	..	1	18	15	......	5	140.00
9	New Hampton	1	..	54	..	......	1	117.50
10	Sanbornton	..	..	5	15	......	3	145.00
11	Tilton	1	1	..	19	......	3	60.00
	Totals	3	4	115	351	$400.50	25	$1,172.40

CARROLL COUNTY.

	TOWNS.	Largest sum of money in any district.	Smallest sum of money in any district.	Longest school in any district: weeks.	Shortest school in any district: weeks.	Rate of school assessment.
1	Albany	$62.50	$26.55	13.00	13.00	.0041
2	Bartlett	......	......	....	......	....
3	Brookfield	......	88.40	18.00	17.00	....
4	Chatham	126.73	26.00	23.00	14.00	.0051
5	Conway	255.00	30.00	24.00	6.00	.0035
6	Eaton	113.00	20.00	18.00	17.00	.0032
7	Effingham	80.00	21.50	13.00	8.00	.0014
8	Freedom	156.58	65.75	19.00	13.00	....
9	Hart's Location	......	......	....	......	....
10	Jackson	125.50	42.60	18.00	10.00	.0084
11	Madison	158.26	40.00	21.00	9.00	.0037
12	Moultonborough	125.00	80.00	26.00	16.00	.0025
13	Ossipee	264.00	177.00	26.00	21.00	.0029
14	Sandwich	204.00	62.00	29.00	11.00	.0023
15	Tamworth	116.00	24.00	19.00	6.00	.0020
16	Tuftonborough	112.50	34.00	18.00	8.00	.0028
17	Wakefield	208.65	100.00	18.00	16.00	.0019
18	Wolfeborough	199.70	130.00	23.40	22.80	.0030
	Average					.0033

CARROLL COUNTY.

	TOWNS.	Fractional school districts.	Districts under special acts.	Number of different scholars attending private schools.	Number of scholars not absent during the year.	Amount of dog tax appropriated to public schools.	Towns employing teachers from normal schools.	Amount paid for superintendence.
1	Albany..........	..	..	..	18	......	..	$36.00
2	Bartlett.........	..	..	..	..	......	2	25.00
3	Brookfield......	..	..	..	6	......	..	23.00
4	Chatham........	..	..	..	7	......	1	40.00
5	Conway.........	..	..	..	51	$148.00	4	259.50
6	Eaton...........	..	..	1	12	13.55	1	45.50
7	Effingham.......	..	..	..	5	......	..	93.00
8	Freedom........	4	..	..	27	......	1	40.00
9	Hart's Location	..	..	..	8	......	..	......
10	Jackson.........	..	..	1	25	25.10	1	26.00
11	Madison........	..	..	..	52	......	..	42.00
12	Moultonboro'...	..	..	2	16	......	1	66.00
13	Ossipee.........	..	..	10	41	......	2	214.90
14	Sandwich.......	..	..	20	29	43.36	1	80.00
15	Tamworth......	..	..	..	36	75.00	..	80.00
16	Tuftonborough.	1	..	2	21	79.00	..	61.25
17	Wakefield	..	..	10	57	......	2	87.00
18	Wolfeborough..	..	2	..	9	......	1	90.00
	Totals.......	5	2	46	420	$384.01	17	$1,309.15

CHESHIRE COUNTY.

	TOWNS.	Largest sum of money in any district.	Smallest sum of money in any district.	Largest number of scholars in any district.	Smallest number of scholars in any district.	Rate of school assessment.
1	Alstead	$151.00	$31.50	29	29	.0031
2	Chesterfield	276.35	60.75	29	9	.0024
3	Dublin	196.00	105.00	25	19	.0030
4	Fitzwilliam	588.50	123.50	31	18	.0040
5	Gilsum	216.00	48.00	24	24	.0027
6	Harrisville	401.42	98.04	20	20	.0025
7	Hinsdale	1,487.25	73.50	35	11	.0060
8	Jaffrey	320.17	127.39	30	22	.0022
9	Keene	3,896.32	51.53	38	10	......
10	Marlborough	... .	......	..	..	......
11	Marlow	155.00	55.75	21	18	.0028
12	Nelson	219.50	17.50	28	7	.0050
13	Richmond	173.00	31.00	22	10	.0042
14	Rindge	245.50	25.00	30	8	.0031
15	Roxbury	148.41	148.41	12	9	.0032
16	Stoddard	209.25	102.50	27	20	.0025
17	Sullivan	219.80	125.27	20	19	.0033
18	Surry	242.59	139.20	25	24	.0043
19	Swanzey	385.25	198.87	30	28	.0040
20	Troy	809.61	31.75	27	7	.0013
21	Walpole	660.00	141.75	26	26	.0024
22	Westmoreland	229.35	121.95	30	20	.0024
23	Winchester	....	......	36	15	.0051
	Average					.0033

CHESHIRE COUNTY.

	TOWNS.	Fractional school districts.	Districts under special acts.	Number of different scholars attending private schools.	Number of scholars not absent during the year.	Amount of dog tax appropriated to public schools.	Towns employing teachers from normal schools.	Amount paid for superintendence.
1	Alstead.........	..	..	3	7	......	4	$75.00
2	Chesterfield....	..	..	2	4	......	2	105.20
3	Dublin	..	..	..	12	......	2	68.00
4	Fitzwilliam	1	..	2	124	$79.00	1	225.00
5	Gilsum	..	..	..	16	......	1	66.00
6	Harrisville.....	..	..	..	21	......	1	66.75
7	Hinsdale	..	..	..	25	......	2	150.00
8	Jaffrey	..	..	4	14	......	..	95.91
9	Keene..........	..	1	300	105	395.00	13	135.00
10	Marlborough ..	..	..	..	104	85.50	1	113.75
11	Marlow	..	..	..	16	......	2	62.00
12	Nelson..........	..	..	4	13	......	1	55.75
13	Richmond......	..	..	6	32	......	3	142.40
14	Rindge	1	..	..	10	......	..	112.00
15	Roxbury	..	..	..	..	......	..	11.75
16	Stoddard	..	..	..	51	......	2	55.00
17	Sullivan........	..	..	..	36	......	..	31.00
18	Surry	..	..	..	4	15.00	..	37.50
19	Swanzey........	..	..	9	19	78.00	3	50.00
20	Troy............	..	..	..	20	......	..	45.00
21	Walpole........	..	1	5	16	......	2	209.24
22	Westmoreland.	..	..	..	16	108.00	1	69.95
23	Winchester	..	..	..	36	114.00	..	314.54
	Totals......	2	2	335	701	$874.50	41	$2,296.74

COOS COUNTY.

	TOWNS.	Largest sum of money in any district.	Smallest sum of money in any district.	Longest school in any district: weeks.	Shortest school in any district: weeks.	Rate of school assessment.
1	Berlin	....	....	..	..	......
2	Carroll	$177.88	$36.00	24	6	.....
3	Clarksville	105.00	54.00	18	15	.0023
4	Colebrook	274.50	85.00	23	8	.0023
5	Columbia	90.00	30.00	12	6	......
6	Dalton	146.41	58.60	22	10	.0033
7	Dummer	130.00	65.00	17	12	.0043
8	Errol	86.00	20.00	22	8	.0031
9	Gorham	....	....	30	19	.0041
10	Jefferson	214.00	84.00	23	11	.0030
11	Lancaster	330.00	47.20	34	10	.0010
12	Milan	284.00	112.50	28	19	.0040
13	Northumberland	390.31	43.03	23	9	.0016
14	Pittsburg	97.25	40.00	22	15	.0048
15	Randolph	145.39	145.38	21	20	.0047
16	Shelburne	130.00	111.20	21	18	.0041
17	Stark	132.00	84.00	18	16	.0023
18	Stewartstown	50.00	28.50	24	14	.0052
19	Stratford	412.00	40.00	26	18	.0031
20	Whitefield	2,125.77	....	33	20	.0027
	Average					.0032

COOS COUNTY.

	TOWNS.	Fractional school districts.	Districts under special acts.	Number of different scholars attending private schools.	Number of scholars not absent during the year.	Amount of dog tax appropriated to public schools.	Towns employing teachers from normal schools.	Amount paid for superintendence.
1	Berlin..........	..	..	..	6	......	..	$60.00
2	Carroll.........	..	..	2	5	$24.00	..	36.00
3	Clarksville	..	..	..	..	64.00	..	32.00
4	Colebrook......	..	1	20	49	......	3	116.50
5	Columbia......	..	..	..	21	......	..	250.00
6	Dalton.........	..	..	..	7	......	..	5.00
7	Dummer.......	..	..	3	7	......	..	33.00
8	Errol...........	..	..	..	12	......	..	8.00
9	Gorham	..	..	12	..	127.00	.	95.25
10	Jefferson	..	..	..	6	......	1	36.00
11	Lancaster	1	1	40	46	......	3	80.00
12	Milan...	..	..	3	9	128.50	..	81.50
13	Northumb'rl'd	..	..	..	25	65.00	2	66.00
14	Pittsburg.......	1	..	..	26	57.00	1	41.00
15	Randolph......	..	..	..	..	......	..	18.00
16	Shelburne......	..	..	8	8	......	1	25.00
17	Stark...........	..	..	5	18	29.00	1	73.00
18	Stewartstown..	..	..	..	137	......	..	80.00
19	Stratford.......	..	..	..	27	......	8	39.25
20	Whitefield.....	1	1	7	20	......	2	......
	Totals	3	3	100	429	$494.50	22	$1,175.50

GRAFTON COUNTY.

	TOWNS.	Largest sum of money in any district.	Smallest sum of money in any district.	Longest school in any district: weeks.	Shortest school in any district: weeks.	Rate of school assessment.
1	Alexandria.................	$125.55	$65.31	21	13	.0058
2	Ashland.....................	407.00	153.00	24	21	.0026
3	Bath.	336.72	59.12	33	12	.0016
4	Benton......................	185.00	52.00	32	14	.0076
5	Bethlehem..	394.00	72.25	32	15	.0034
6	Bridgewater................	108.00	44.00	21	11	.0035
7	Bristol......................	120.00	40.00	30	10	.0023
8	Campton............	199.13	56.86	24	11	.0035
9	Canaan	166.00	52.25	25	16	.0020
10	Dorchester.................	87.92	28.72	18	6	.0021
11	Easton......................	120.70	73.00	20	15	.0027
12	Ellsworth	83.50	81.25	17	17	.0050
13	Enfield......................	390.09	35.07	33	20	.0026
14	Franconia..................	277.60	100.40	38	28	.0021
15	Grafton.....................	132.10	49.12	20	10	.0020
16	Groton......................	96.00	45.60	16	12	.0019
17	Hanover.........	600.00	36.00	35	12	.0023
18	Haverhill...................	288.00	50.00	36	10	.0034
19	Hebron......................	94.50	31.50	16	9	.0010
20	Holderness	191.60	65.00	22	13	.0017
21	Landaff......................	193.50	92.00	28	18	.0027
22	Lebanon....................	224.00	44.00	32	8	......
23	Lincoln......................	....	......	15	12	.0032
24	Lisbon.......................	185.00	54.20	32	14	.0012
25	Littleton....................	1,408.00	70.00	38	9	.0030
26	Livermore....	....	......	..	..	.0017
27	Lyman.......................	148.00	81.00	30	17	.0026
28	Lyme.........................	....	......	20	12	.0021
29	Monroe......................	161.60	36.00	29	16	.0015
30	Orange......................	49.50	27.00	11	6	.0037
31	Orford....	386.00	60.00	30	10	.0026
32	Piermont...................	114.00	74.00	26	20	.0036
33	Plymouth	450.00	195.00	38	30	.0053
34	Rumney....................	232.50	85.00	29	17	.0019
35	Thornton...................	56.00	36.00	9	8	.0021
36	Warren......................	358.20	32.00	30	8	.0039
37	Waterville....	52.00	52.00	9	6	......
38	Wentworth.................	219.98	24.00	28	6	.0050
39	Woodstock.........	62.50	36.00	10	6	.0018
	Average................					.0028

GRAFTON COUNTY.

	TOWNS.	Fractional school districts.	Districts under special acts.	Number of different scholars attending private schools.	Number of scholars not absent during the year.	Amount of dog tax appropriated to public schools.	Towns employing teachers from normal schools.	Amount paid for superintendence.
1	Alexandria.....	..	..	6	27	......	2	$95.50
2	Ashland	..	1	1	50	......	1	....
3	Bath	..	..	2	17	......	1	75.00
4	Benton..........	..	..	..	2	......	..	20.00
5	Bethlehem......	1	1	4	50	$69.00	3	105.00
6	Bridgewater....	..	..	..	33	31.00	2	50.00
7	Bristol..........	..	1	12	105	......	2	35.00
8	Campton........	..	..	5	20	63.00	3	100.35
9	Canaan..........	..	..	5	116	72.00	1	150.00
10	Dorchester.....	..	..	2	26	......	1	18.50
11	Easton..........	..	..	..	..	......	..	....
12	Ellsworth.......	..	..	..	11	......	1	....
13	Enfield..........	..	1	8	61	......	1	162.00
14	Franconia......	..	..	25	..	60.00	..	20.00
15	Grafton	..	..	..	38	......	1	40.53
16	Groton..........	..	..	..	9	39.00	2	33.60
17	Hanover........	..	1	36	10	......	3	130.00
18	Haverhill... ...	..	2	25	13	......	..	113.00
19	Hebron..........	..	..	2	7	14.00	1	27.00
20	Holderness.....	..	..	..	9	......	2	49.00
21	Landaff.........	..	..	8	21	......	2	27.50
22	Lebanon........	..	1	15	39	14.00	4	150.00
23	Lincoln.........	..	..	..	..	3.00	..	....
24	Lisbon..........	..	2	..	47	......	4	125.50
25	Littleton........	..	1	81	76	......	8	150.00
26	Livermore......	..	..	1	..	2.00	..	....
27	Lyman..........	..	..	1	21	41.00	..	51.25
28	Lyme...........	1	..	6	16	69.44	1	79.07
29	Monroe	..	..	3	11	......	..	35.00
30	Orange..........	1	..	..	26	37.00	..	26.00
31	Orford	..	..	1	18	......	2	80.55
32	Piermont.......	..	..	5	18	49.00	..	64.00
33	Plymouth.......	..	..	..	6	51.00	13	75.00
34	Rumney	1	..	..	12	......	5	64.12
35	Thornton.......	1	..	..	60	50.00	4	55.00
36	Warren	..	..	1	8	......	2	52.00
37	Waterville......	..	..	..	..	2.00	..	6.00
38	Wentworth.....	3	..	..	35	19.00	1	50.00
39	Woodstock	..	..	6	4	......	..	19.25
	Totals.......	8	11	261	1,072	$685.44	63	$2,334.72

HILLSBOROUGH COUNTY.

	TOWNS.	Largest sum of money in any district.	Smallest sum of money in any district.	Longest school in any district: weeks.	Shortest school in any district: weeks.	Rate of school assessment.
1	Amherst	....	......	31.00	30.00	.0040
2	Antrim	$655.72	$130.00	29.00	24.00	.0020
3	Bedford	255.00	174.60	29.00	29.00	.0021
4	Bennington	277.00	235.30	27.00	26.00	.0020
5	Brookline	....	......	60.00	56.00	....
6	Deering	109.13	80.60	21.00	16.00	.0020
7	Francestown	268.92	36.00	26.00	9.00	.0020
8	Goffstown	450.00	95.00	29.00	17.00	.0050
9	Greenfield	414.00	102.90	22.00	16.00	.0022
10	Greenville	306.00	144.00	34.00	24.00	.0020
11	Hancock	140.00	50.00	20.00	10.00	.0067
12	Hillsborough	1,500.00	39.00	33.00	9.00	.0016
13	Hollis	950.00	125.00	31.00	27.00	.0026
14	Hudson	250.75	209.50	33.00	31.00	.0044
15	Litchfield	184.45	172.04	22.80	22.80	.0022
16	Lyndeborough	251.00	117.75	24.00	16.00	.0030
17	Manchester	....	......	34.00	34.00	.0026
18	Mason	259.95	217.38	30.00	29.00	.0023
19	Merrimack	361.31	164.95	32.00	26.00	.0051
20	Milford	1,500.00	165.00	36.00	27.00	.0031
21	Mont Vernon	216.00	111.35	28.00	25.00	.0024
22	Nashua	....	......	35.00	24.00	.0020
23	New Boston	170.00	36.00	22.00	8.00	.0040
24	New Ipswich	....	......	32.00	25.00	.0030
25	Pelham	....	......	31.00	27.00	.0026
26	Peterborough	....	......	30.00	10.00	.0024
27	Sharon	131.57	113.57	27.00	26.00	.0044
28	Temple	143.25	122.25	21.00	21.00	.0036
29	Weare	252.22	115.49	29.00	18.00	.0023
30	Wilton	650.00	65.00	32.00	10.00	....
31	Windsor	....	......	10.00	7.00	.0030
	Average					.0029

HILLSBOROUGH COUNTY.

	TOWNS.	Fractional school districts.	Districts under special acts.	Number of different scholars attending private schools.	Number of scholars not absent during the year.	Amount of dog tax appropriated to public schools.	Towns employing teachers from normal schools.	Amount paid for superintendence.
1	Amherst	..	..	10	4	......	1	$162.75
2	Antrim	..	..	12	43	......	1	150.00
3	Bedford	..	..	4	14	$135.65	..	112.00
4	Bennington	..	..	....	21	......	..	25.00
5	Brookline	..	..	5	6	......	..	50.00
6	Deering	..	..	...	33	......	1	52.50
7	Francestown	..	..	20	17	......	..	100.00
8	Goffstown	..	1	4	25	......	2	86.00
9	Greenfield	..	..	3	14	......	1	60.00
10	Greenville	..	..	5	5	26.00	1	49.50
11	Hancock	..	..	....	15	......	..	60.00
12	Hillsborough	..	1	....	21	78.00	1	......
13	Hollis	..	1	....	5	......	1	155.00
14	Hudson	..	..	....	6	......	2	60.00
15	Litchfield	1	..	....	3	......	1	25.00
16	Lyndeborough	..	..	9	17	......	1	89.75
17	Manchester	..	1	3,400	32	......	4	2,080.00
18	Mason	1	..	2	2	85.00	2	72.50
19	Merrimack	..	..	....	3	......	2	128.00
20	Milford	..	..	10	24	131.00	1	250.00
21	Mont Vernon	1	..	20	4	......	1	60.00
22	Nashua	..	..	838	152	863.00	8	1,518.00
23	New Boston	1	..	2	82	72.00	..	90.00
24	New Ipswich	..	..	11	4	......	1	110.00
25	Pelham	..	..	6	3	115.00	2	60.00
26	Peterborough	..	..	....	..	107.50	1	60.00
27	Sharon	..	..	....	2	25.00	..	31.00
28	Temple	..	..	3	16	64.00	..	30.00
29	Weare	..	..	10	18	......	3	139.75
30	Wilton	..	..	15	11	......	3	150.00
31	Windsor	..	..	..	2	3.00	..	7.00
	Totals	4	4	4,359	604	$1,705.15	41	$6,023.75

MERRIMACK COUNTY.

	TOWNS.	Largest sum of money in any district.	Smallest sum of money in any district.	Longest school in any district: weeks.	Shortest school in any district: weeks.	Rate of school assessment.
1	Allenstown	$189.00	$35.00	22	6	......
2	Andover	212.50	110.00	25	20	.0036
3	Boscawen	428.00	150.75	29	24	.0030
4	Bow	132.00	105.50	36	19	.0025
5	Bradford	134.10	46.00	27	10	.0021
6	Canterbury	237.85	106.25	24	20	.0020
7	Chichester	248.45	172.48	28.80	26	.0038
8	Concord	......	68.96	36	10	......
9	Danbury	184.30	118.50	25	25	.0028
10	Dunbarton	213.06	157.24	27	26.80	.0026
11	Epsom	168.50	66.00	21	19.60	.0020
12	Franklin	......	......	36	30	.0051
13	Henniker	224.00	114.00	28	21	.0029
14	Hill	180.00	105.00	23	22	.0035
15	Hooksett	350.00	155.00	30	20	.0022
16	Hopkinton	241.35	88.20	28	17	.0027
17	Loudon	......	......	29	19	.0025
18	Newbury	207.72	26.60	29	12	.0033
19	New London	241.55	104.37	27.60	20	.0027
20	Northfield	90.00	40.00	18	8	.0062
21	Pembroke	320.00	192.00	32	32	......
22	Pittsfield	......	......	32	29	.0033
23	Salisbury	230.69	91.75	23	18	.0021
24	Sutton	191.96	50.37	26	16	.0020
25	Warner	226.00	32.00	30	8	.0021
26	Webster	......	......	28	16	.0022
27	Wilmot	117.00	48.00	18	10	.0020
	Average					.0028

MERRIMACK COUNTY.

	TOWNS.	Fractional school districts.	Districts under special acts.	Number of different scholars attending private schools.	Number of scholars not absent during the year.	Amount of dog tax appropriated to public schools.	Towns employing teachers from normal schools.	Amount paid for superintendence.
1	Allenstown....	..	..	4	5	......	2	......
2	Andover.......	2	..	16	39	......	2	$100.00
3	Boscawen	..	1	2	26	......	4	......
4	Bow............	..	..	5	8	......	1	77.00
5	Bradford	..	1	2	45	$66.00	..	51.50
6	Canterbury....	..	..	3	4	......	..	......
7	Chichester	..	..	10	3	......	1	100.00
8	Concord	..	4	..	53	305.50	3	......
9	Danbury.......	..	..	10	..	42.00	1	50.00
10	Dunbarton	..	..	..	7	......	1	102.00
11	Epsom.........	1	..	3	8	......	1	62.00
12	Franklin.......	..	..	10	40	......	11	250.00
13	Henniker... ..	5	..	25	3	......	3	104.00
14	Hill	1	..	..	18	......	1	47.80
15	Hooksett	..	..	5	4	179.00	3	87.00
16	Hopkinton	..	..	4	15	......	4	175.00
17	Loudon........	..	..	4	84	......	..	101.30
18	Newbury	..	..	..	24	76.50	1	57.99
19	New London..	..	..	17	7	......	1	62.50
20	Northfield	1	1	3	21	......	1	50.00
21	Pembroke.....	1	..	50	5	......	2	175.00
22	Pittsfield	..	..	15	16	......	..	150.00
23	Salisbury	..	..	2	25	18.00	3	65.00
24	Sutton	..	..	..	14	30.00	..	70.00
25	Warner	4	..	..	99	......	..	105.00
26	Webster	..	..	8	5	19.50	1	......
27	Wilmot	..	..	9	12	22.00	..	40.00
	Totals	15	7	207	590	$758.50	47	$2,083.09

ROCKINGHAM COUNTY.

	TOWNS.	Largest sum of money in any district.	Smallest sum of money in any district.	Longest school in any district: weeks.	Shortest school in any district: weeks.	Rate of school assessment.
1	Atkinson	$124.29	$54.00	19.50	17.50	.0017
2	Auburn	164.58	107.27	24.60	22.30	.0027
3	Brentwood	239.50	25.00	27.70	21.00	.0042
4	Candia	165.50	126.50	24.00	24.00	.0032
5	Chester	313.00	45.00	26.40	14.00	.0020
6	Danville	190.00	103.00	23.00	20.00	.0080
7	Deerfield	520.00	95.00	22.00	18.00	.0030
8	Derry	360.42	117.10	33.00	21.00	.0023
9	East Kingston	196.00	168.00	28.00	24.00	.0017
10	Epping	233.00	95.00	21.00	18.00	.0018
11	Exeter	1,480.00	96.00	36.00	26.00	.0023
12	Fremont	254.61	176.25	32.00	29.00	.0032
13	Greenland	600.00	253.06	35.00	34.00	.0030
14	Hampstead	252.00	154.00	31.00	28.00	.0033
15	Hampton	300.00	165.00	33.00	33.00	.0024
16	Hampton Falls	323.23	229.16	33.00	30.00	.0013
17	Kensington	234.00	162.50	26.00	26.00	.0020
18	Kingston	202.50	132.00	27.00	22.00	.0020
19	Londonderry	94.25	66.00	26.00	25.00	.0050
20	Newcastle	......	......	33.00	33.00	.0044
21	Newington	......	......	34.00	34.00	.0019
22	Newmarket	......	......	36.00	10.00	.0021
23	Newton	......	......	24.00	22.00	.0022
24	North Hampton	......	......	33.00	33.00	.0021
25	Northwood	220.00	45.00	12.00	9.00	.0035
26	Nottingham	126.00	86.85	19.00	17.00	.0018
27	Plaistow	221.00	144.00	21.00	19.80	.0017
28	Portsmouth	......	......	....	....	....
29	Raymond	185.00	75.00	20.00	15.00	.0033
30	Rye	398.50	366.25	33.00	28.80	.0029
31	Salem	320.00	99.80	31.00	19.00	.0016
32	Sandown	123.50	104.50	19.00	19.00	.0097
33	Seabrook	270.00	148.50	27.00	27.00	.0022
34	South Hampton	......	......	31.00	29.40	.0021
35	South Newmarket	516.00	298.00	32.00	31.20	.0042
36	Stratham	341.01	341.01	31.00	31.00	.0015
37	Windham	128.65	105.12	17.00	16.00	.0020
	Average					.0029

ROCKINGHAM COUNTY.

	TOWNS.	Fractional school districts.	Districts under special acts.	Number of different scholars attending private schools.	Number of scholars not absent during the year.	Amount of dog tax appropriated to public schools.	Towns employing teachers from normal schools.	Amount paid for superintendence.
1	Atkinson... ...	..	..	10	11	$43.00	..	$30.00
2	Auburn.........	..	..	1	4	47.00	..	100.00
3	Brentwood.....	..	..	..	7	56.50	..	30.00
4	Candia..........	..	..	12	4	......	1	66.00
5	Chester.........	1	..	..	16	132.00	1	60.00
6	Danville........	..	..	2	12	......	..	20.00
7	Deerfield.......	1	1	..	10	......	2	18.00
8	Derry...........	..	1	30	23	137.23	1	80.50
9	East Kingston.	..	..	3	4	26.00	..	25.00
10	Epping.........	..	..	..	45	......	3	100.00
11	Exeter..........	..	..	153	20	......	1	150.00
12	Fremont........	..	..	5	20	......	1	30.00
13	Greenland......	..	..	..	9	......	..	......
14	Hampstead.....	..	..	..	7	71.00	..	76.00
15	Hampton.......	..	..	1	5	......	1	30.00
16	Hampton Falls.	..	..	4	2	19.00	1	25.00
17	Kensington	..	..	5	7	......	..	30.00
18	Kingston.......	..	..	17	22	......	1	70.00
19	Londonderry...	..	..	1	18	112.00	2	110.50
20	Newcastle......	..	..	5	20	......	1	25.00
21	Newington......	..	1	4	..	2.00	..	13.00
22	Newmarket	..	..	6	41	......	..	70.00
23	Newton.........	..	..	..	15	......	..	50.00
24	N. Hampton....	..	..	10	20	......	2	18.00
25	Northwood.....	..	..	3	2	88.00	..	76.00
26	Nottingham.....	..	..	..	10	131.00	1	69.50
27	Plaistow........	..	..	..	46	40.00	2	30.00
28	Portsmouth....	..	..	..	35	960.25	3	66.67
29	Raymond.......	1	..	2	19	......	3	60.00
30	Rye..............	..	..	10	5	......	3	60.00
31	Salem...........	..	..	3	11	150.00	3	133.00
32	Sandown.......	..	..	..	41	......	1	......
33	Seabrook.......	..	..	..	58	......	..	35.00
34	S. Hampton....	..	..	..	3	......	2	27.30
35	S. Newmarket..	..	..	12	3	......	1	60.00
36	Stratham.......	..	..	14	5	......	..	64.20
37	Windham.......	..	..	..	5	60.00	..	55.00
	Totals........	3	3	313	585	$2,074.98	37	$1,963.67

STRAFFORD COUNTY.

	TOWNS.	Largest sum of money in any district.	Smallest sum of money in any district.	Longest school in any district: weeks.	Shortest school in any district: weeks.	Rate of school assessment.
1	Barrington	$142.00	$116.50	22	22	.0022
2	Dover	......	......	38	20	.0027
3	Durham	597.50	65.50	28	12	.0023
4	Farmington	4,765.67	70.00	37	24	.0020
5	Lee	186.75	175.25	25	23	.0023
6	Madbury	......	......	33	32	.0026
7	Middleton	124.00	101.00	20	18	.0030
8	Milton	275.00	50.85	23	11	.0031
9	New Durham	143.50	81.40	20	16	.0019
10	Rochester	......	168.00	36	28	.0025
11	Rollinsford	305.31	......	36	33	.0019
12	Somersworth	......	150.00	36	21	.0070
13	Strafford	144.00	98.00	20	20	.0030
	Average					.0027

STRAFFORD COUNTY.

	TOWNS.	Fractional school districts.	Districts under special acts.	Number of different scholars attending private schools.	Number of scholars not absent during the year.	Amount of dog tax appropriated to public schools.	Towns employing teachers from normal schools.	Amount paid for superintendence.
1	Barrington....	..	..	..	10	$130.50	..	$113.00
2	Dover..........	..	..	600	131	219.64	9	150.00
3	Durham	..	..	2	3	......	2	51.25
4	Farmington....	..	1	6	49	......	..	260.00
5	Lee	..	..	..	5	......	1	60.10
6	Madbury.......	..	..	2	6	......	..	45.00
7	Middleton	..	..	..	4	......	..	27.00
8	Milton	..	..	..	41	37.50	1	144.00
9	New Durham..	..	..	1	22	44.00	..	57.00
10	Rochester	1	5	14	112	......	1	450.00
11	Rollinsford....	..	1	2	6	......	1	55.00
12	Somersworth..	..	1	..	25	137.12	1	60.00
13	Strafford	..	..	..	84	......	..	75.50
	Totals	1	8	627	498	$568.76	16	$1,547.85

SULLIVAN COUNTY.

	TOWNS.	Largest sum of money in any district.	Smallest sum of money in any district.	Longest school in any district: weeks.	Shortest school in any district: weeks.	Rate of school assessment.
1	Acworth	$203.16	$92.80	24.20	20.00	.0042
2	Charlestown	428.30	......	35.00	18.00	.0024
3	Claremont	709.50	55.00	......	11.00	.0025
4	Cornish	179.58	40.50	26.00	9.00	.0020
5	Croydon	189.93	41.61	26.00	16.00	......
6	Goshen	99.00	79.00	19.00	18.00	......
7	Grantham	124.33	77.00	18.00	18.00	.0019
8	Langdon	158.52	150.00	23.00	21.00	.0026
9	Lempster	112.00	69.50	18.00	18.00	.0026
10	Newport	1,000.00	89.50	36.00	20.00	.0030
11	Plainfield	191.50	75.01	25.00	20.00	.0018
12	Springfield	68.71	42.33	10.00	8.60	.0036
13	Sunapee	174.00	36.00	29.00	11.00	.0028
14	Unity	148.00	24.50	21.00	8.00	.0019
15	Washington	149.80	45.00	23.00	8.80	.0021
	Average					.0022

SULLIVAN COUNTY.

	TOWNS.	Fractional school districts.	Districts under special acts.	Number of different scholars attending private schools.	Number of scholars not absent during the year.	Amount of dog tax appropriated to public schools.	Towns employing teachers from normal schools.	Amount paid for superintendence.
1	Acworth........	1	..	..	43	......	1	$100.00
2	Charlestown....	..	1	11	11	......	2	65.00
3	Claremont......	..	..	25	105	......	6	150.00
4	Cornish.........	..	..	12	43	......	1	142.60
5	Croydon	3	..	..	9	......	..	38.00
6	Goshen..........	..	..	2	51	$83.00	..	31.00
7	Grantham.......	..	..	..	9	......	1	24.84
8	Langdon........	..	..	4	9	28.40	..	47.75
9	Lempster..	1	..	..	57	48.60	..	55.86
10	Newport	..	1	..	21	......	..	100.00
11	Plainfield.......	..	..	12	11	170.13	2	186.72
12	Springfield	..	..	3	46	44.00	1	37.00
13	Sunapee	..	..	..	19	39.50	2	41.00
14	Unity...........	..	..	2	44	40.25	..	....
15	Washington	..	..	4	17	29.00	2	60.00
	Totals... ...	5	2	75	495	$482.88	18	$1,079.79

TABLE IV.

The information contained in the following table has been derived from answers to a circular sent to the various towns in the State. Its purpose is to give, in one view, some idea of the resources of the State for a higher education than that given in the common schools.

The public and private schools are given in separate tables.

It is to be regretted that some schools have failed to report for the past year.

TABLE

SCHOOLS OF A HIGHER GRADE

	NAME.	PLACE.	Date of organization.	Male teachers.	Female teachers.	Male students.
1	Bristol High School	Bristol	....	1	3	20
2	Candia Village High School	Candia Village	1878	1	..	14
3	Charlestown High School	Charlestown	1873	1	..	18
4	Concord High School	Concord	1859	3	5	78
5	Conant High School	Jaffrey	1870	1	..	15
6	Dover High School	Dover	1850	1	4	70
7	Dublin High School	Dublin	1875	1	..	21
8	Exeter Boys' High School	Exeter	1848	1	..	35
9	Fisherville High School	Fisherville	....	1	3	20
10	Franklin High School	Franklin Falls	1874	1	1	25
11	Franklin High School	Salmon Falls	1858	1	..	13
12	Farmington High School	Farmington	1869	1	1	40
13	Goffstown High School	Goffstown	....	1	3	70
14	Great Falls High School	Somersworth	1850	1	2	21
15	Hancock High School	Hancock	1873	1	1	13
16	Hanover High School	Hanover	1877	..	1	13
17	Hampstead High School	Hampstead	1876	1	..	8
18	Haverhill Academy	Haverhill	1793	1	2	41
19	Hinsdale High School	Hinsdale	1878	1	1	20
20	Hollis High School	Hollis	1876	1	1	34
21	Keene High School	Keene	1867	2	2	65
22	Laconia High School	Laconia	1875	..	1	15
23	Lebanon High School	Lebanon	1877	1	1	21
24	Littleton Graded School	Littleton	1868	1	8	166
25	Lisbon High School	Lisbon	1877	1	..	15
26	Manchester High School	Manchester	1867	2	3	62
27	Milford High School	Milford	1853	1	2	25
28	Meredith High School	Meredith	1876	1	3	80
29	Nashua High School	Nashua	1853	1	4	79
30	Newmarket High School	Newmarket	1874	1	3	95
31	Newport High School	Newport	1874	1	1	22
32	Peterborough High School	Peterborough	1871	1	1	18
33	Pittsfield High School	Pittsfield	1883	1	..	15
34	Portsmouth High School	Portsmouth	1830	1	3	58
35	Rindge High School'	Rindge	....	1	..	14
36	Robinson Female Seminary	Exeter	1869	2	7	..
37	Rochester High School	Rochester	1861	2	1	31
38	Simonds Free High School	Warner	1871	1	2	30
39	State Normal School	Plymouth	1870	3	2	1
40	Stevens High School	Claremont	1868	1	3	41
41	Troy High School	Troy	1865	..	..	..
42	Walpole High School	Walpole	1854	1	..	52
43	Whitefield High School	Whitefield Village	1885	1	4	93
44	Winchester High School	Winchester	1872	1	1	25
				49	80	1,722

No. IV.

(PUBLIC SCHOOLS).

	Female students.	Students residing in New Hampshire.	Pursuing higher branches.	Ancient languages.	Modern languages.	Volumes in libraries.	School year begins.	Weeks in school year.	Value of buildings, apparatus, and grounds.
1	30	50	30	..	6	..	April	32	$15,000
2	7	21	8	2	2	..	November.	30	500
3	22	40	29	12	..	..	April	33	2,000
4	96	174	174	129	164	750	September.	36	34,000
5	8	23	10	1	1	20	September.	20	2,000
6	80	150	150	97	35	150	September.	38	20,000
7	11	32	12	4	..	..	August	10	....
8	..	35	35	12	..	..	September.	36	3,000
9	21	41	6	..	..	..	April	35	15,000
10	32	57	57	57	11	273	September.	36	37,000
11	7	19	6	..	..	50	September.	36	6,000
12	40	84	84	42	..	300	September.	37	10,000
13	70	150	25	..	..	..	April.......	32	....
14	48	55	60	49	20	250	March. ...	36	20,000
15	16	29	13	3	..	..	September.	22	....
16	15	26	28	15	..	20	April.......	36	12,000
17	13	21	19	..	..	7	August	36	10,000
18	44	85	38	12	8	150	September.	36	4,000
19	25	44	30	19	..	125	September.	36	* 200
20	32	66	30	20	20	135	September.	32	15,000
21	70	134	135	40	20	300	April	38	50,000
22	29	44	44	.	..	12	September.	36	2,500
23	30	49	49	20	6	50	September.	33	20,000
24	178	343	54	22	..	200	August	38	40,000
25	13	28	18	16	10	..	March......	31	1,500
26	103	165	165	112	31	400	September.	38	47,000
27	41	66	52	14	9	52	September.	36	6,000
28	73	153	28	..	153	50	September.	30	5,000
29	115	192	194	96	80	150	September.	36	125,000
30	85	180	60	15	..	10	April	36	20,000
31	37	58	24	21	..	250	September.	36	* 150
32	22	40	31	9	..	..	August	34	2,000
33	18	33	33	14	..	..	March	30	3,500
34	90	140	58	95	36	950	September.	40	24,000
35	23	36	30	..	..	..	September.	11	....
36	196	171	73	68	85	430	September.	37	100,000
37	65	96	96	52	..	40	September.	36	25,000
38	35	65	65	20	10	300	August	39	12,000
39	62	60	63	..	..	450	September.	38	30,000
40	52	92	93	36	12	300	September.	39	25,000
41	..	..	..	..	..	..	....	..	....
42	51	103	22	16	..	50	April	34	35,000
43	112	205	..	18	8	..	March......	33	5,000
44	29	54	54	14	..	55	August	36	8,000
	2,138	3,721	2,082	1,198	728	6,279			$792,350

* Apparatus.

SCHOOLS OF A HIGHER GRADE *

	NAME.	PLACE.	Date of charter.	Date of organization.	Male teachers.	Female teachers.	Male students.
1	Appleton Academy	New Ipswich	1789	1789	3	2	42
2	Atkinson Academy	Atkinson	1791	1787	1	..	15
3	Austin Academy	Strafford Center	1833	1834	1	1	30
4	Barnard Academy	South Hampton	1836	1834	..	1	8
5	Beede's Normal Institute	Center Sandwich	....	1839	1	1	17
6	Boarding and Day School	Portsmouth	1874	1874	1	4	..
7	Chester Academy	Chester	1853	1853	..	1	18
8	Chesterfield Academy	Chesterfield	1790	1790	1	..	12
9	Classical Institute	Milton Three Ponds	1866	1866	..	2	17
10	Coe's Northwood Academy	Northwood Center	1866	1866	1	1	20
11	Colby Academy	New London	1837	1836	3	3	67
12	Colebrook Academy	Colebrook	1832	1848	1	1	40
13	Commercial College	Portsmouth	....	1873	3	..	44
14	Contoocook Academy	Contoocook	1856	1856	1	1	16
15	Deering Academy	Deering Center	....	....	..	..	..
16	Dearborn Academy	Seabrook	1853	1853	1	1	22
17	Franklin Academy	Dover	1818	1818	1	2	25
18	Francestown Academy	Francestown	1790	1800	2	2	42
19	Gaskell's Business College	Manchester	....	1865	2	..	151
20	Gilmanton Academy	Gilmanton	1794	1794	1	1	25
21	Hampton Academy	Hampton	1810	1811	1	1	27
22	Henniker Academy	Henniker	1836	1836	1	..	13
23	Hillsboro' Br. Union School	Hillsboro' Bridge	1883	1880	1	3	72
24	Kimball Union Academy	Meriden	1813	1815	2	2	19
25	Kingston Academy	Kingston	1840	1810	2	..	12
26	Lancaster Academy	Lancaster	1827	1827	1	2	37
27	McGaw Institute	Reed's Ferry	1849	1849	1	2	23
28	Mt. St. Mary's Institute	Manchester	....	....	..	..	..
29	McCollom Institute	Mont Vernon	1851	1851	1	2	42
30	Marlow Academy	Marlow	1842	1842	1	..	12
31	N. E. Masonic Char. Institute	C. Effingham	1861	1861	1	1	37
32	N. H. Con. Sem. and Fem. Col	Tilton	1852	1845	3	5	99
33	New Hampton Lit'ry Inst'n	New Hampton	1853	1853	5	4	151
34	Newton High School	Newton	....	1881	1	..	20
35	Northwood Seminary	Northwood Ridge	1866	1866	1	1	23
36	Phillips (Exeter) Academy	Exeter	1781	1783	8	..	281
37	Pembroke Academy	Pembroke	1818	1819	1	2	48
38	Pinkerton Academy	Derry	1814	1815	2	2	40
39	Proctor Academy	Andover	1879	1880	2	3	40
40	Raymond High School	Raymond Center	....	1867	..	1	16
41	St. Mary's School for Girls	Concord	1885	1885	2	4	..
42	St. Paul's School	Concord	1855	1856	24	..	289
43	School for Boys	Holderness	1878	1879	5	..	58
44	Tilden Ladies' Seminary	West Lebanon	1853	1854	1	7	..
45	Tubbs's Union Academy	Washington	1849	1850	..	1	14
46	Wakefield Academy	Wakefield	....	1832	1	..	21
47	Wolfeborough Academy	Wolfeborough	....	1879	1	..	9

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* Schools that have made no return are reported as in previous year.

(PRIVATE SCHOOLS).

	Female students.	Students residing in New Hampshire.	Pursuing higher branches.	Ancient languages.	Modern languages.	Volumes in libraries.	School year begins.	Weeks in school year.	Value of buildings, apparatus, and grounds.
1	24	56	10	20	12	500	September.	37	$15,000
2	10	25	6	3	1	1,200	September.	36	6,000
3	31	61	18	7	..	20	August.....	36	3,000
4	18	26	16	7	..	....	September.	20	2,000
5	18	35	30	1	1	200	September.	30	8,000
6	40	..	35	10	40	1,000	September.	36	26,000
7	18	36	28	8	..	....	September.	40	500
8	11	23	11	2	..	....	August.....	12	500
9	31	37	18	..	..	....	September.	44	2,800
10	22	37	21	5	..	600	September.	36	8,000
11	71	120	77	39	34	3,000	September.	37	100,000
12	50	65	35	7	..	....	September.	22	2,500
13	9	42	53	12	7	....	September.	40	....
14	31	47	29	7	..	....	August	27	2,500
15	..	..	..	..	..	....	....	..	....
16	19	41	10	1	..	....	September.	32	10,000
17	20	45	40	10	6	875	September.	40	10,000
18	40	82	70	20	25	450	August	35	2,000
19	40	178	..	..	..	....	....	52	1,000
20	20	44	40	5	6	900	September.	36	5,000
21	31	58	40	12	..	....	September.	33	5,000
22	11	24	12	..	1	....	August	36	2,500
23	64	136	22	9	1	....	September.	33	16,000
24	28	38	40	12	10	2,500	August	39	15,000
25	8	20	19	6	..	25	September.	30	2,500
26	40	73	31	13	4	....	September.	34	5,000
27	22	45	43	8	1	650	August	34	12,000
28	..	..	..	..	..	....	....	..	....
29	21	58	36	6	..	955	September.	36	7,000
30	20	32	15	5	10	....	September.	22	1,000
31	21	58	31	19	58	....	February...	33	3,000
32	92	175	180	58	40	600	August ...	39	25,000
33	81	211	..	36	14	4,000	August. ...	40	30,000
34	16	36	25	8	..	....	September.	36	5,000
35	28	51	20	16	1	500	September.	36	5,000
36	..	68	..	..	..	1,500	September.	37	175,000
37	50	98	89	18	..	550	August	37	5,000
38	42	79	40	18	12	350	September.	40	65,000
39	43	74	21	13	7	500	September.	36	15,000
40	15	31	13	3	1	....	February ..	12	1,000
41	26	24	12	4	26	100	September.	35	18,000
42	..	4	..	289	51	6,000	September.	37	225,000
43	..	23	..	33	127	400	September.	36	48,000
44	50	13	32	8	17	1,400	September.	37	60,000
45	10	24	12	2		....	December .	11	1,500
46	15	36	25	8	..	....	September.	20	....
47	9	18	18	17	..	....	September.	36	....

TABLE

STATISTICAL SUMMARY

		Belknap.	Carroll.	Cheshire.
	TOWNS.			
1	Towns having organized schools	11	17	23
	DISTRICTS.			
2	Districts	15	20	25
3	Fractional districts	3	5	2
4	Districts under special acts	4	2	2
	SCHOOLS.			
5	Different public schools	134	155	215
6	Graded schools	23	7	61
7	Town and district high schools	3	1	5
8	Schools averaging 12 scholars or less	55	56	65
9	Schools averaging 6 scholars or less	10	23	14
10	Average length of schools in weeks of five days	20.92	17.13	23.64
	SCHOLARS.			
11	Boys attending school two weeks or more	1,680	1,721	3,141
12	Girls attending school two weeks or more	1,398	1,682	2,825
13	Number of scholars under 6 years	212	331	358
14	Number of scholars between 6 and 16	2,283	2,745	4,876
15	Number of scholars over 16 years	264	371	542
16	Average attendance of all the scholars.	2,283	2,440	4,152
17	Average attendance to each school	17.04	15.07	19.03
18	Ratio of average attendance to the whole number	.741	.717	.695
19	Number reported attending private schools, not registered in the public schools	115	46	335
20	Number reported between five and fifteen years not attending any school.	18	198	220
21	Whole number reported under items 11, 12, 19, 20	3,211	3,647	6,521
22	Selectmen's enumeration between five and fifteen years. Boys	491	801	1,118
	Girls	445	804	1,033
23	Number not absent during the year	351	420	701
24	Number pursuing higher branches	399	428	792
	TEACHERS.			
25	Male teachers	15	48	33
26	Female teachers	156	150	277
27	Average wages of male teachers per month, including board	$38.06	$26.61	$44.25
28	Average wages of female teachers per month, including board	$25.08	$21.67	$26.51
29	Teaching the first time	21	37	47
30	Teaching the same school two or more successive terms	82	57	163
31	Teachers from normal schools	25	17	41
32	Towns employing teachers from normal schools	9	12	16

No. V.

BY COUNTIES.

	Coös.	Grafton.	Hillsborough.	Merrimack.	Rockingham.	Strafford.	Sullivan.
1	20	39	31	27	37	13	15
2	23	52	34	34	39	16	17
3	3	8	4	15	3	1	5
4	3	11	4	7	3	8	2
5	180	334	372	294	253	171	168
6	24	38	153	77	58	72	26
7	5	9	11	5	8	7	4
8	46	100	84	84	60	24	66
9	12	25	26	27	5	7	17
10	20.06	18.06	25.59	23.76	26.41	26.81	20.47
11	2,299	3,677	5,719	4,233	4,161	3,080	1,660
12	2,055	3,567	5,442	3,973	3,913	3,030	1,514
13	371	480	927	576	711	362	207
14	3,579	6,167	10,190	6,937	6,862	5,361	2,658
15	404	794	746	700	425	383	309
16	3,093	5,296	7,468	5,662	5,502	4,840	2,403
17	17.01	15.85	20.07	18.90	21.75	28.30	14.30
18	.723	.731	.660	.677	.777	.792	.733
19	100	261	4,359	207	313	627	75
20	97	211	258	254	224	580	207
21	4,471	7,716	15,778	8,667	7,611	7,317	3,456
22	1,016	2,267	1,338	759	1,635	1,743	847
	953	2,267	1,209	1,003	1,604	1,731	793
23	429	1,072	604	590	585	498	495
24	401	868	1,216	909	1,015	753	452
25	32	59	53	49	25	33	21
26	219	427	457	170	198	185	194
27	$37.79	$31.08	$47.22	$41.25	$48.75	$63.13	$32.16
28	$22.59	$21.43	$26.53	$24.38	$28.54	$27.48	$20.39
29	41	77	65	49	44	34	36
30	80	121	303	195	187	147	90
31	22	63	41	47	39	16	18
32	9	27	22	20	23	7	9

STATISTICAL SUMMARY

		Belknap.	Carroll.	Cheshire.
	SCHOOLHOUSES.			
33	Number of schoolhouses	133	166	212
34	Reported unfit for use	17	18	29
35	Built during the year	3	2	5
36	Having maps or globes	68	70	212
37	Estimated value of buildings, sites, and furniture	$90,884.63	$41,626.72	$215,381.84
38	Estimated value of apparatus	1,363.00	796.00	4,728.00
	REVENUE.			
39	Town taxes	21,501.42	14,785.54	48,163.03
40	District taxes	10,159.45	1,286.54	10,140.31
41	Literary fund from the State	1,786.78	2,351.18	3,769.10
42	Local funds	360.69	396.27	1,454.91
43	Railroad tax	232.20	83.02	198.53
44	Dog tax	400.50	384.01	874.50
45	Contributed in board, fuel, and money	132.51	368.67	688.50
46	Entire amount of revenue	34,573.55	19,655.23	65,288.88
	EXPENDITURES.			
47	New buildings	25,401.69	618.00	11,712.88
48	Paid for interest or to cancel debt	600.00	....	600.00
49	Permanent repairs	468.67	2,167.48	2,589.71
50	Miscellaneous expenses, — ordinary repairs, fuel, care, etc	2,241.62	1,235.12	5,924.55
51	Teachers' salaries	18,691.03	14,819.35	43,059.61
52	Superintendence	1,172.40	1,309.15	2,296.74
53	Total expended	48,575.41	20,149.10	66,183.49
54	Average cost per scholar for miscellaneous expenses and salaries of teachers	6.79	4.96	8.03

BY COUNTIES — *Continued.*

	Coös.	Grafton.	Hillsborough.	Merrimack.	Rockingham.	Strafford.	Sullivan.
33	146	252	286	293	242	149	167
34	19	49	24	46	18	20	26
35	2	5	2	1	....	1	3
36	73	196	335	246	229	124	141
37	$60,565.00	$130,421.08	$775,592.38	$293,107.27	$207,289.69	$286,015.53	$62,161.06
38	1,005.18	2,691.25	21,792.88	4,093.46	3,460.82	5,205.50	1,051.00
39	18,701.83	39,360.79	117,259.02	64,282.93	61,461.97	49,916.32	22,832.23
40	4,450.00	7,420.10	21,918.00	13,801.74	1,638.87	17,599.73	4,575.91
41	3,642.87	4,857.51	7,597.20	5,097.78	5,399.03	3,825.26	2,150.52
42	311.69	1,793.63	2,524.35	463.85	801.91	407.19	1,394.53
43	295.74	1,476.29	262.17	498.48	1,189.30	580.04	27.83
44	494.50	685.44	1,705.15	758.50	2,074.98	568.76	482.88
45	1,688.22	875.33	532.92	495.13	766.07	782.34	297.61
46	29,584.85	56,469.09	151,798.81	85,398.41	73,332.13	73,679.64	32,761.51
47	1,202.46	5,291.00	3,649.09	800.00	93.44	800.00	3,200.00
48	1,339.40	2,439.91	3,639.00	611.56	320.00	9,263.25	346.76
49	566.49	1,806.30	6,955.57	3,131.96	4,202.00	4,002.07	1,023.88
50	2,875.25	6,201.61	25,390.04	6,677.78	7,788.19	9,295.41	3,012.22
51	20,841.51	40,168.28	109,822.13	62,064.90	61,305.10	52,685.01	20,588.66
52	1,175.50	2,334.72	6,023.75	2,083.09	1,963.67	1,547.85	1,079.79
53	28,000.61	58,241.82	155,479.58	75,369.29	75,672.40	77,593.59	29,251.31
54	5.51	6.00	8.62	7.42	7.49	9.08	5.63

STATE SUMMARY AND COMPARATIVE TABULAR VIEW.

		1887.	1886.	Increase.	Decrease.
	TOWNS.				
1	Towns having organized schools	235	235	......	......
	DISTRICTS.				
2	Districts	275	1,890	......	1,615
3	Fractional districts	49	203	......	154
4	Districts under special acts	46	52	......	6
	SCHOOLS.				
5	Different public schools	2 276	2,770	......	494
6	Graded schools	539	526	13	......
7	Town and dist. high schools	58	57	1	......
8	Schools averaging twelve scholars or less	640	838	......	198
9	Schools averaging six scholars or less	166	359	......	193
10	Average length of schools in weeks of five days	22.39	20.37	2.02	......
	SCHOLARS.				
11	Boys attending school two weeks or more	31,371	32,870	......	1,499
12	Girls attending school two weeks or more	29,399	31,349	......	1,950
13	Number of scholars under six years	4,535	4,632	......	97
14	Number of scholars between six and sixteen	51,658	53,291	......	1,633
15	Number of scholars over sixteen years	4,938	5,221	......	283
16	Average attendance of all the scholars	43,139	44,769.13	......	1,630.13
17	Average attendance to each school	18.73	16.16	2.57	......
18	Ratio of average attendance to the whole number	.724	.711	.013	......
19	Number reported attending private schools, not registered in the public sch'ls.	6,438	5,832	606	......
20	Number reported between five and fifteen years not attending any school	2,267	3,570	......	1,303
21	Whole number reported under items 11, 12, 19, 20	69,475	73,621	......	4,146
22	Selectmen's enumeration between five and fifteen years.. Boys	12,015	12,655	......	640
	Girls	11,842	12,012	......	170
23	Number not absent during the year	5,745	6,406	......	661
24	Number pursuing higher branches	7,233	7,350	......	117
	TEACHERS.				
25	Male teachers	368	404	......	36
26	Female teachers	2,433	3,076	......	643
27	Average wages of male teachers per month, including board	$41.03	$40.22	$0.81	......

STATE SUMMARY — *Continued.*

		1887.	1886.	Increase.	Decrease.
	TEACHERS — *Continued.*				
28	Average wages of female teachers per month, including board	$24.46	$23.56	$0.90	....
29	Teaching the first time	451	531	....	80
30	Teaching the same sch'l two or more successive terms	1,425	1,609	....	174
31	Teachers fr'm normal sch'ls	329	365	....	36
32	Towns employing teachers from normal schools	154	142	32	....
	SCHOOLHOUSES.				
33	Number of schoolhouses	2,046	2,190	....	144
34	Reported unfit for use	266	281	....	15
35	Built during the year	24	12	12	....
36	Having maps or globes	1,694	1,684	10	....
37	Estimated value of buildings, sites, and furniture	$2,163,045.20	$2,265,262.00	....	$102,216.80
38	Estimated val. of apparatus	46,187.09	49,582.88	....	3,395.79
	REVENUE.				
39	Town taxes	458,265.08	470,177.09	....	11,912.01
40	District taxes	92,890.65	75,720.78	$17,169.87	... .
41	Lit'ry fund from the State	40,577.23	43,304.00	....	2,726.77
42	Local funds	10,909.02	10,716.62	192.40	....
43	Railroad tax	4,843.60	5,200.96	... .	357.36
44	Dog tax	8,429.22	5,118.88	3,310.34	....
45	Contributed in board, fuel, and money	6,627.30	7,233.83	....	606.53
46	Entire amount of revenue	622,542.10	617,472.16	5,069.94	....
	EXPENDITURES.				
47	New buildings	52,768.56	27,383.67	25,384.89	....
48	Paid for interest and to cancel debt	19,159.88	14,540.65	4,619.23	....
49	Permanent repairs	26,914.13	36,582.84	....	9,668.71
50	Miscellaneous expenses, — ordinary repairs, fuel, care, etc	70,641.79	65,097.69	5,544.10	....
51	Teachers' salaries	444,045.58	454,373.92	....	10,328.34
52	Superintendence	20,986.66	17,964.02	3,022.64	....
53	Total expended	634,516.60	615,942.79	18,573.81	....
54	Average cost per scholar f'r miscellaneous expenses and salaries of teachers	8.62	8.08	.54	....
55	Average cost per scholar of the average attendance	11.90	11.57	.33	....
56	Av. cost per scholar for the entire sum expended	10.63	9.29	1.34	....
57	Average cost per scholar of the average attendance f'r the entire sum expended	14.70	13.72	.98	....
58	Average cost per scholar for miscellaneous, salaries, and 6 per cent interest on the value of buildings and apparatus	10.84	10.03	.81	....
59	Average cost per scholar of the average attendance on the same items	15.00	14.57	.43	....

SCHOOL OFFICERS.

CHARLES H. SAWYER.................................*Governor.*

Councilors.

District 1. — NATHANIEL H. CLARK. ....Plaistow.
District 2. — JOHN C. LINEHAN................Concord.
District 3. — CHARLES WILLIAMS ....Manchester.
District 4. — JOHN B. SMITH.................Hillsborough.
District 5. — ALBERT S. BATCHELLOR.......Littleton.

JAMES W. PATTERSON, State Superintendent of Public Instruction.

City Superintendents of Public Instruction.

Louis J. Rundlett..................................Concord.
Channing Folsom..................................Dover.
William E. Buck..................................Manchester.
O. S. Williams....................................Nashua.
C. H. Morss...Portsmouth.

Joseph B. Abbott, *Chairman*..........................Keene.
Ira J. Prouty, *Secretary*...............................Keene.

TOWN SCHOOL COMMITTEES.

TOWNS.	NAMES.	Post-office address when different from town.
Acworth	James M. Reed	
	Samuel Slader	
	J. N. Davis	
Albany	Samuel K. Merrill	Conway.
	Orra L. Piper	Chocorua.
	Alonzo S. Piper	Chocorua.
Alexandria	Charles N. Plumer	
	Horace F. Tilton	
	J. E. S. Walker	
Allenstown	John B. Haselton	
	John H. Sullivan	
	John D. Sweatt	
Alstead	E. M. Smith	
	George A. Mayo	
	S. A. Mitchell	
Alton	Phineas H. Wheeler	
	Oliver J. M. Gilman	
	Nathaniel Stephens	
Amherst	H. D. Hicks, M. D	
	Mrs. Sophia E. Dodge	
	C. L. Trow	

TOWNS.	NAMES.	Post-office address when different from town.
Andover	George W. Stone	
	Henry W. Kilburn	
	Ira Loverin	
Antrim	Morris Christie	
	John E. Hastings	
	Anson Swett	
Ashland	W. F. Harris	
	S. C. Baker	
	D. N. Pollard	
Atkinson	Gilman Greenough	
	H. N. Sawyer	
	George E. Emerson	
Auburn	Andrew F. Fox	
	Wells C. Underhill	
	Frances A. Griffin	
Barnstead	John H. Jenkins	
	Enos George	
	Horace N. Colbath	Gilmant'n Iron W'ks
Barrington	Flavius J. Berry	
	Ellen J. Smith	
	B. Frank Felker	
Bartlett	George W. M. Pitman	
	Alvah W. Buswell	
	M. W. Pierce	
Bath	Henry C. Carbee	
	J. M. Williams	
	Asa P. Prescott	
Bedford	N. B. Hull	Manchester, Box 181.
	Charles B. Beal	
	F. H. Rowe, M. D.	
Belmont	Joseph Plumer	
	J. M. Sargent	
	F. L. Gerald	
Bennington	Josiah H. Heald	
	W. E. Downes	
	Levi Colby	
Benton	Samuel H. Chamberlin	
	David F. Richardson	
	James H. Keyser	
Berlin	Henry F. Wardwell	
	F. D. Bartlett	
	R. N. Chamberlin	
Bethlehem	H. J. Kenney	
	W. C. Bartlett	
	J. E. Viall	
Boscawen	William P. Abbott	
	Edgerton Raymond	
	John G. Meder	
Bow	David N. Morgan	
	George W. Colby	
	Samuel Woodbury	
Bradford	G. B. Andrews	
	D. G. Peaslee	
	Charles F. Davis	
Brentwood	Horace J. Robinson	Exeter, Box 72.
	Russell H. Fellows	
	Charles C. S. Stevens	
Bridgewater	Emily L. Dalton	
	Joseph S. Morrison	
	H. W. Tilton	
Bristol	Solon Dolloff	
	C. H. Mudgett	
	E. Sandborn	
Brookfield	Stephen H. Hutchins	
	Samuel H. Plummer	
	Joseph S. Curtis	

TOWNS.	NAMES.	Post-office address when different from town.
Brookline	Alonzo S. Wallace	
	C. A. Stickney	
Campton	Thomas S. Pulsifer	
	William A. Smith	
	Charles W. Johnson, Jr.	
Canaan	Charles F. Everett	
	Moses T. Colby	
	J. D. Weeks	
Candia	Henry A. Hubbard	
	J. Lane Fitts	
	George F. Cass	
Canterbury	Luther Sargent	
	Olwyn W. Dow	
	Caroline F. Emery	
Carroll	Ephraim L. Miles	
	Franklin B. Worthley	
	Charles S. Miles	
Center Harbor	David M. Whitcher	Meredith Village.
	Daniel W. Coe	Center Harbor.
	Orville P. Smith	Ashland.
Charlestown	David Farwell	North Charlestown.
	R. H. Ramsey	
	Jane Larabee	
Chatham	Harry Hildebrand	
	Josiah W. Walker	
	John F. Charles	
Chester	Miss H. A. Melvin	
	C. F. Marston	
	Dr. F. I. Drowne	
Chesterfield	John F. Butler	
	Hiram B. Morgan	
	Willis G. Cain	
Chichester	S. A. Kendall	
	Otis Maxfield	
	G. W. Lake	
Claremont	Edwin Vaughan	
	Israel D. Hall	
	John Bailey	
Clarksville	Charles Young	
	Willis Harriman	
	Edgar Comstock	
Colebrook	Scott B. Fletcher	
	Sidney B. Whittemore	
	Milton Harriman	
Columbia	W. E. Cone	
	Jonathan Gilman	Colebrook.
	Mrs. H. L. Gray	
Concord	Isaac N. Abbott	
	John L. Tallant	
	William P. Ballard	
	Louis J. Rundlett, *Supt. Dist. No. 1.*	
Conway	Rev. S. G. Norcross	North Conway.
	John B. Nash, Esq.	Conway Center.
	C. W. Wilder	
Cornish	Chester Pike	
	Herbert Deming	
	William H. Child	
Croydon	Marshal Putnam	
	Seth W. Barton	
	Edgar W. Davis	
Dalton	Lucius Clevel	
	Bert A. Taylor	
	Ira C. Carlton	
Danbury	James S. Knowlton	
	William T. Norris	
	Wells W. Walker	

TOWNS.	NAMES.	Post-office address when different from town.
Danville	Bailey Sargent	
	Clarence Collins.	
	George W. Sherburne	
Deerfield	F. D. Veasey	
	John C. Cate	
	T. W. Fowler	
Deering	Isaac Smith	
	George C. Patten	
	Alvin Tubbs	
Derry	Nathaniel H. Brown	
	Isaac H. Jones	
	Edmund Adams	
Dorchester	Byron Richardson	
	John M. Fitts	
	N. K. Burnham	
Dover	Thomas B. Garland, *President*	
	Charles A. Fairbanks, *Secretary*	
	Channing Folsom, *Superintendent*	
Dublin	Henry D. Learned	
	James Allison	
	Luke Richardson	
Dummer	Isaac C. Wright	
	W. A. Willis	
	John B. Lovejoy	
Dunbarton	John B. Ireland	
	Philander M. Lord	
Durham	Mrs. Hattie S. Watson	
	Albert DeMeritt	
	Rev. J. A. Knowles	
East Kingston	Benjamin K. Webster.	
	Joseph H. Kimball	
	Mrs. Laura O. Philbrick	
Easton	Asahel G. Aldrich	
	R. W. Young	Wildwood.
Eaton	Frank M. Hatch	
	Fred R. Thompson	
	Charles Towle	
Effingham	Albert N. Gould, M. D	
	Frank T. Lougee, M. D	
	Rev. William H. Cotton	
Enfield	George F. Pettengill	Enfield Center.
	J. F. Bryant	
	William Wilson	
Ellsworth	Henry H. Pease	
	Samuel Sherburn	
	Sylvester Littlefield	
Epping	George N. Shepard	West Epping.
	L. Everett Fogg	
	C. F. Edgerley	
Epsom	Daniel G. Chesley	
	Samuel Martin	
	James H. Tripp	
Errol	A. E. Bennett	
	H. W. Fickett	
	John Akers	
Exeter	J. D. Lyman	
	J. A. Brown	
	G. W. Weston	
Farmington	Frank Emerson	
	John F. Chesley	
	Asa L. Tebbetts	
Fitzwilliam	Jonas Damon	
	Mrs. Harriet W. Stearns	
	Samuel Kendall	
Francestown	George D. Epps	
	George F. Pettee	
	James I. Woodbury	

TOWNS.	NAMES.	Post-office address when different from town.
Franconia	R. L. Howard	
	C. B. Young	
	S. D. Spooner	
Franklin	Omar A. Towne	
	Parker C. Hancock	
	John W. Staples, M. D.	
Freedom	Almon R. Bennett	
	Alonzo Towle	
	Charles H. Andrews	
Fremont	Alden F. Sanborn	
	David C. Drake	
	Perley C. Robinson	
Gilford	George W. Sanders	
	Ellen E. F. Wadleigh	Weirs.
	Charles H. Sleeper	
Gilmanton	George W. Parsons	
	J. F. Weeks	
	Owen J. Edgerly	
Gilsum	George C. Hubbard	
	John S. Collins	
	O. J. Wilson	
Gorham	T. N. Wight	
	A. S. Twitchell	
	J. W. Greenlaw	
Goshen	J. Hooper	
	E. Sischo	
	J. P. Adams	
Grafton	George S. Barney	
	Fred A. Stevens	
	John W. Tinkham	
Grantham	Avis J. S. Flanders	
	Lyman B. Hayward	
	Thomas J. Morrill	
Greenland	Edward Robie	
	John Hatch	
	John P. Weeks	
Greenfield	Sidney H. Hardy	
	D. W. Burnham	
	John T. Robertson	
Greenville	C. E. Hall	
	F. B. Heald	
	S. H. Bacon	
Groton	Daniel Kidder	
	George E. Colburn	
	Dimond G. Wells	
Goffstown	Gilman F. Farley	
	Alvin Hadley	
	Edwin Flanders	
Hampstead	James H. Emerson	
	Moses C. Morse	
	John D. Ordway	
Hampton	W. T. Merrill	
	J. F. Williams	
	C. M. Lamprey	
Hampton Falls	Horace A. Godfrey	
	John J. Brown	
	J. C. Sanborn	
Hancock	William Weston	
	Joshua S. Lakin	
	Rev. H. Gulick	
Hanover	A. S. Ingalls	
	John M. Fuller	
	Stephen Eastman	
Harrisville	Frank P. Fisk	
	Corban C. Farwell	
	Samuel D. Bemis	

TOWNS.	NAMES.	Post-office address when different from town.
Haverhill	Caleb Wells	
	S. P. Carbee, M. D.	
	D. K. Davis	
Hebron	E. K. Follansbee	
	Celia A. Jewell	
	Hiram M. Worthley	
Henniker	Freeman E. Colby	
	George H. Dodge	
	W. T. Sargent	
Hill	W. B. Cawley	
	Frank G. Dickerson	
	S. F. Lougee	
Hillsborough	Alden P. Farrar	
	Edgar Hazen	
	Frank J. Bickford	
Hinsdale	C. B. Hopkins	
	M. C. Dix, M. D.	
	W. S. Leonard	
Holderness	Ereeman L. Wallace	
	Parker S. Burleigh	
	Samuel D. Merrill	
Hollis	Levi Abbott	
	Charles S. Spalding	
	Franklin Worcester	
Hooksett	Jesse Gault	
	F. D. Randall, M. D.	
	Eugene Head	
Hopkinton	Henry D. Dustin	
	Thomas B. Richardson	
	John S. Straw	
Hudson	Daniel Gage	
	Kimball Webster	
	D. O. Smith, M. D.	
Jackson	Mrs. J. H. Dearborn	
	Cyrus F. Perkins	
	Miss Clara L. Trickey	
Jaffrey	David Chamberlain	
	Marshall C. Adams	
	William W. Livingston	
Jefferson	Abner Davis	
	J. M. Morse	
	George E. Hutchins	
Keene	Henry O. Spalding	
	Charles Buckminster	
	Joseph Chase	
Kensington	John W. York	
	Jonathan E. Brown	
	Stephen H. Kimball	
Kingston	Charles Burr Towle	
	T. O. Reynolds, M. D.	
	Jesse P. Marshall	
Laconia	J. S. Doolittle	
	Jacob Sanborn	
	Charles R. Swain	
Lancaster	Edward Spaulding	
	Joseph D. Howe	
	Henry S. Hilliard	
Landaff	J. E. Hall	
	Moses Whitcher	
	Hiram Clarke	
Langdon	Daniel P. Davis	
	Charles G. Marshall	
	Mary S. Prentiss	
Lebanon	S. Austin	
	T. P. Waterman	West Lebanon.
	J. S. Truman	West Lebanon.

TOWNS.	NAMES.	Post-office address when different from town.
Lee	C. F. Thompson	
	Hosea B. Snell	
	Bert P. Thompson	
Lempster	Abram Bean	
	Lucias A. Purmort	
	Horatio L. Thompson	
Lincoln	John W. E. Tuttle	
	William Sargent	
	W. E. Pollard	
Lisbon	S. P. Ford	
	J. S. Young	
	D. S. Richardson	
Litchfield	Mary W. Griffin	
	Zachariah K. Whittemore	
	F. L. Center	
Littleton	Warren McIntire	
	Milo Harris	
	Frank C. Albee	
Livermore	O. P. Gilman	
	J. S. Marlow	
	A. S. Lane	
Londonderry	William P. Nevins	Derry Depot.
	Samuel Gilcreast	
	Lucian H. Nesmith	
Loudon	Charles E. Sanborn	
	W. P. Osgood	
	N. W. Lovering	
Lyman	Wilmer Langway	
	Charles Woolson	
	W. W. Miner	
Lyme	Henry L. Fitch	No. Stratford, Vt.
	William H. Dimick	
	F. W. Baker	Lyme Center.
Lyndeborough	N. McIntire	
	George Rose	
	David C. Grant	
Madbury	C. W. Hayes	
	C. E. Perkins	
	W. W. Hayes	
Madison	Albert Allard	
	Enoch L. Drew	
	Langdon M. Atkinson	
Manchester	Hon. John Hosley, *Chairman*	
	James E. Dodge, *Clerk*	
	William E. Buck, *Superintendent*	
Marlborough	Silas H. McAllister	
	Nathaniel H. Merriam	
	Elisha O. Woodward	
Marlow	Perley E. Fox	
	Nathan T. Brown	
	Lyman H. Huntley	
Mason	E. Spaulding	
	Ozro Hodgman	
	Otis Childs	
Meredith	George G. Hoyt	
	Lyman E. Hall	
	John Webster	
Merrimack	Charles S. Nesmith	Reed's Ferry.
	George E. Patterson	South Merrimack.
	Miss H. McMillan	Merrimack.
Middleton	James D. Moore	
	Charles H. Leighton	
	D. E. D. Frost	
Milan	A. A. Higgins	
	D. B. York	
	L. M. Cole	

TOWNS.	NAMES.	Post-office address when different from town.
Milford	A. W. Smith, M. D.	
	Rebecca F. Doane	
	A. W. Howison	
Milton	John W. Simes	Milton Mills.
	Luther Hayes	
	W. F. Wallace, M. D.	
Mont Vernon	J. W. Carson	
	W. H. Kendall	
	Mrs. C. Campbell	
Monroe	John Lang	
	B. M. Clark	
	Agnes Hadlock	
Moultonborough	Miss Fanny A. Huntress	
	James E. French	
	Joseph G. Abbott	
Nashua	James B. Fassett, *President*	
	Jason E. Tolles, *Clerk*	
	O. S. Williams, *Superintendent*	
Nelson	John H. Osgood	
	Albert Davis	
	Mrs. E. J. Tolman	
New Boston	George D. Marden	
	George C. Warren	
	E. L. Bartlett	
Newbury	Clarence B. Cheney	
	Silas W. Dana	
	Richard T. Muzzey	
Newcastle	O. V. Randall	
	John Albee	
	Silas Harding	
New Durham	Horatio G. Chamberlain	
	Eben E. Berry	
	Penuel C. Ham	
New Hampton	M. H. Merrow	
	J. S. Whitcher	
	R. C. Rollins	
New Ipswich	William R. Thompson	
	James F. F. Marsh, Jr.	
	A. F. Shattuck	
New London	F. J. Peaslee	
	J. E. Shepard	
	Oren D. Crockett	
Newington	Frank M. Hoyt	
	Valentine M. Coleman	
	Clarence M. DeRochemont	
Newmarket	Charles A. Morse, M. D.	
	William T. Folsom	
	Irving T. George	
Newport	William H. Perry	
	Charles Emerson	
	R. E. Bartlett	North Newport.
Newton	Rufus N. Elwell	
	George B. Merrill	
	Irving M. Heath	
Northfield	Byron Shaw	Franklin Falls.
	Daniel Sanborn	
	James N. Forrest	
North Hampton	Francis R. Drake	
	Rev. Elvin R. Amazeen	
	George L. Garland	
Northumberland	Charles C. O'Brion, M. D.	
	James H. Curtis	
	Napoleon B. Perkins	
Northwood	A. E. Cotton	
	J. S. Trickey	

TOWNS.	NAMES.	Post-office address when different from town.
Nottingham	George E. Smith	
	Washington T. Leighton	
	Joseph N. Cilley	
Orange	Orra H. Heath	
	Charles A. McConnell	
	William Redden	
Orford	John Bickford	
	Charles C. Tallman	
	Thomas T. Savage	
Ossipee	W. H. Lord	
	E. M. Stevens	
	Aldo Rumery	
Pelham	J. B. Griffin	
	Charles W. Hobbs	
	Jonathan N. Woodman	
Pembroke	Joseph H. Dearborn	
	Charles P. Morse	
	Frank W. Stevens	
Peterborough	J. Q. Adams	
	Ezra M. Smith	
	J. H. Cutler, M. D.	
Piermont	Amos B. Rodiman	
	Frank B. Towle	
	Asa P. Chase	
Pittsburg	Eugene H. Danforth	
	Ernest A. Lyford	
	George Dennett	
Pittsfield	D. K. Foster	
	James Griffin	
	F. E. Randall	
Plainfield	A. B. Chellis	
	William C. True	
	W. B. Thrasher	
Plaistow	Miss Annie L. Dow	
	Edson E. Peaslee	
	Joseph Harris	
Plymouth	Charles A. Jewell	
	Alvin Burleigh	
	H. P. Peck	
Portsmouth	Marcellus Eldredge, *Chairman*	
	John Pender, *Secretary*	
Randolph	Frank Scates	
	Gilman C. Bradbury	
	Francis C. Wood	
Raymond	Eben S. Griffin	
	Sewell D. Tilton	
	Dana C. Healey	
Richmond	Charles W. Conway	
	Leason Martin	
	Mrs. Mary E. Barden	
Rindge	Oren Sawtell	
	Charles Whitney	
	Charles F. Platts	
Rochester	Louis Richardson	
	Dudley B. Waldron	
	Edward H. Meader	
Rollinsford	Amos W. Pike	
	William R. Garvin	
	Joseph D. Roberts	
Roxbury	Elbridge Kingsbury	
	William Phillips	
	Jedediah R. Holt	
Rumney	C. A. Chase	
	C. W. Herbert	
	J. A. Colburn	

TOWNS.	NAMES.	Post-office address when different from town.
Rye	G. H. Jenness	
	T. W. Rand	
	Charles D. Garland	
Salem	Matthew H. Taylor	
	Eben B. Wells	
	Rev. H. H. Colburn	
Salisbury	T. D. Little	
	C. C. Rogers	
	John Shaw	
Sanbornton	E. H. Wright	Hill.
	J. N. Sanborn	Laconia.
	O. S. Sanborn	East Tilton.
Sandown	Andrew J. Currier	
	William J. Moore	
	Alden E. Pillsbury	
Sandwich	George S. Hoyt	
	Herman F. Quimby	
	Mrs. Mary M. Beede	
Seabrook	Daniel W. Colcord	
	W. A. Rand	
	F. L. Weare	
Sharon	B. H. Sanders	
	Charles Bass	
	Amos J. Proctor	
Shelburne	W. W. Wheeler	
	C. C. Hebbard	
	C. E. Philbrook	
Somersworth	Fred L. Chapman	
	Sumner C. Horne	
	George B. Lord	
South Hampton	John K. Chase	
	Jacob Eaton	
	Alfred S. Jewell	
South Newmarket	A. J. Neal	
	J. H. Fitts	
	A. W. Richards	
Springfield	P. T. Smith	
	Albert Morrill	
	Warren Philbrick	
Stark	Luke Cole	
	Mary A. Cole	
	Seth Cole	
Stewartstown	J. C. Poore	
	L. Farnham	
	Hiram Piper	
Strafford	J. B. Smith,	
	G. T. Foss	
	J. S. Neal	
Stoddard	William H. Chase	
	Cummings B. McClure	
	William L. Abbott	
Stratford	Guy W. Johnson	
	John C. Pattee	
	Chas. D. Platt	
Stratham	J. J. Scammon	
	J. W. Rollins	
	C. W. Scott	
Sullivan	Henry C. Rawson	
	Almon P. Tyler	
Sunapee	Edwin C. Fisher	
	George H. Bartlett	
	Edwin P. Stickney	
Surry	George M. Reed	
	Frederick R. Crane	
	G. B. Britton	

TOWNS.	NAMES	Post-office address when different from town.
Sutton	Benjamin Johnson	
	Cyrus H. Little	
	Chas. A. Fowler	
Swanzey	George I. Cutter, M. D.	
	Alonzo A. Ware	
	Benjamin Reed	
Tamworth	T. B. Mason	
	N. F. Hoag	
	Henry T. Hodgkins	
Temple	O. J. Kirke	
	W. T. Bacon	
	DeWitt C. Bragdon	
Thornton	Frank Fox	
	John Pettee	
	Frank Huston	
Tilton	Horace B. Savage	
	William H. H. Rollins	East Tilton.
	Horace Sanborn	
Troy	Asa C. Dort	
	George N. Parmenter	
	Rev. Josiah Merrill	
Tuftonborough	William H. Davis	
	Joshua M. Hadley	
	James A. Bennett	Center Tuftonboro'.
Unity	Edward S. Bailey	
	C. Reed Lewis	
Wakefield	Morrill B. Smith	
	John G. Sanborn	
	Geo. H. Gage	
Walpole	Albert F. Nims	
	Bolivar Lovell	
	Lucius Wellington	
Warner	Lemuel W. Collins	
	Edmund C. Cole	
	F. M. Colby	
Warren	Frank C. Clement	
	Horace D. Abbott	
	Jeremiah S. Jewett	
Washington	H. O. Hill	
	G. N. Gage	
	J. F. Bailey	
Waterville	Levi Dolloff	
	Silas B. Elliott	
	Willard C. Oakes	
Weare	Almon L. Sleeper	
	Lindly H. Osborn	
	Robert Peaslee	
Webster	F. F. Fisk	
	J. L. Colby	
	James N. Snyder	
Wentworth	Samuel G. Currier	
	John B. Foster	
	Thomas Huckins	
Wentworth's L'n	No town organization	
Westmoreland	W. J. Reed	
	A. A. Barker	
Whitefield	C. E. King	
	L. J. Miner	
	C. L. Dudley	
Wilmot	Julius B. Hale	
	John M. Carr	
	John G. Currier	
Wilton	Mrs. Sarah E. Dunbar	
	Philander Ring	
	George E. Bales	

TOWNS.	NAMES.	Post-office address when different from town.
Winchester	H. W. Brigham	
	A. H. Taft	
	Charles Forgate	
Windham	Joseph L. Cottle	
	Willis E. Hughes	
	Wm. C. Harris	
Windsor	Herbert F. Dresser	
	Joseph C. Chapman	
	Chas. C. Jones	
Wolfeborough	George A. Haines	
	John H. Rust	
	Everett C. Banfield	
Woodstock	Joseph W. Campbell	
	George F. Russell	
	B. M. B. Selingham	

PRINCIPALS OF INSTITUTIONS OF A HIGHER GRADE.

COLLEGE.

TOWN.	NAME OF INSTITUTION.	PRINCIPAL.
Hanover	Dartmouth College	S. C. Bartlett, D. D., *Pres.*
	Chandler Scientific Department	Prof. E. R. Ruggles.
	Agricultural College	Prof. B. T. Blanpied.
	Medical College	Dr. C. P. Frost.
	Thayer School of Engineering	Prof. Robert Fletcher.

NORMAL SCHOOL.

Plymouth	State Normal School	C. C. Rounds, Ph. D.

ACADEMIES, SEMINARIES, HIGH AND SELECT SCHOOLS.

Amherst	High School	Walter L. Moore.
Andover	Proctor Academy	Herbert B. Dow.
Ashland	High School	DeW. C. Durgin.
Atkinson	Atkinson Academy	T. B. Rice.
Berlin	High School	Irving Stearns.
Bethlehem	High School	Charles A. Guild.
Bristol	High School	Miss A. H. Carlton.
Candia Village.	High School	H. A. Hubbard.
Charlestown	High School	A. B. Crawford.
Chester	Chester Academy	Miss L. A. Harriman.
Claremont	Stevens High School	Lemuel S. Hastings.
Colebrook	Colebrook Academy	E. A. Kimball.
Concord	High School	John F. Kent.
	St. Mary's School	Miss E. M. Gainforth.
	St. Paul's School	Dr. Henry A. Coit.
Deerfield	High School	D. S. Whitmass.
Deering (Cent'r)	Deering Academy	Mary C. Whittemore.
Derry	Pinkerton Academy	G. W. Bingham.
Dover	High School	James H. Willoughby.
	Franklin Academy	Thomas Hussey.
Dublin	High School	Howard Kelton.
Enfield.	High School	W. L. Pettengill.
Epping	Watson Academy	W. H. Dartt.
Exeter	Phillips (Exeter) Academy	Prof. Walter Quincy Scott.
	Robinson's Female Seminary	George N. Cross.
	Boys' High School	Albion Burbank.
Farmington	High School	C. A. Strout.
Francestown	Francestown Academy	Charles S. Page.

TOWN.	NAME OF INSTITUTION.	PRINCIPAL.
Franconia	Dow Academy	
Franklin	High School	W. A. Robinson, A. M.
Freedom	High School	Irad Folsom.
Gilmanton	Gilmanton Academy	S. W. Robertson, A. B.
Gilford	High School	Miss R. M. Franklin.
Goffstown	High School	Luther M. Keneston.
Gorham	High School	Jesse F. Libbey.
Greenland	High School	Miss Annie L. Howe.
Hampstead	High School	Fred M. Rice.
Hampton	Hampton Academy	J. Sanborn.
Hancock	High School	G. H. Kelton.
Hanover	High School	Jessie C. Learoyd.
Haverhill	Academy	D. Otis Bean.
Henniker	Henniker Academy	D. B. Pike.
Hillsboro' Br.	Union School	Dana G. Marble.
Hinsdale	High School	C. P. Hall.
Holderness	School for Boys	Rev. Frank Coolbaugh.
Hollis	High School	C. S. Judkins.
Jaffrey	Conant High School	H. J. Stevens.
Keene	High School	J. N. Mallory.
Kingston	Kingston Academy	H. A. Hubbard.
Laconia	High School	W. H. Hartshorn.
Lancaster	Lancaster Academy	D. T. Timberlake.
Lebanon	High School	C. C. Boynton.
Lebanon (West)	Tilden Ladies' Seminary	Prof. E. H. Barlow.
Littleton	High School	D. P. Dame.
Lisbon	High School	Everett A. Pugsley.
Manchester	Bartlett's School	Lucy Bartlett.
	Gaskell's Business College	William Heron, Jr.
	High School	E. R. Goodwin.
	Mt. St. Mary's Academy	Sister Mary Frances, Mother Superior.
Marlow	Academy	F. A. Douglass.
Meredith	High School	Fred Hersey.
Merrimack (Reed's Ferry)	McGaw Normal Institute	F. E. Burnette.
Milford	High School	L. H. Owen.
Mont Vernon	McCollom Institute	C. S. Campbell.
Nashua	High School	E. J. Goodwin.
	St. Aloysius (Parochial)	Sister Raphael.
New Hampton	Literary Institution	Prof. A. B. Meservey.
New Ipswich	Appleton Academy	W. A. Preston.
New London	Colby Academy	Prof. James P. Dixon.
Newmarket	High School	Frederick W. Doring.
Newport	High School	C. O. Thurston.
Newton	High School	C. E. Boynton.
Northwood (C'r)	Coe's Northwood Academy	William P. Kelley.
" (Ridge)	Northwood Seminary	J. H. Hutchins.
North Conway	Select School	Mrs. C. E. Norcross.
Orford	Orford Academy	B. M. Weld.
Pembroke	Pembroke Academy	Prof. Isaac Walker.
Penacook	High School	George A. Dickey.
Peterborough	High School	Ai S. Annis.
Pittsfield	High School	George H. Gray.
	Foster's School	D. K. Foster.
Plainfield (Meriden)	Kimball Union Academy	David G. Miller.
Portsmouth	High School	John Pickard.
	Commercial College	Lewis E. Smith.
	Boarding and Day School	Miss A. C. Morgan.
Plymouth	State Normal School	Prof. C. C. Rounds.
	High School	Mary L. Stuart.
Raymond	High School	W. S. Abbott.
Rindge	High School	M. A. Cummings.
Rochester	High School	W. W. Allen.
Rollinsford (Salmon Falls)	High School	F. R. Hathaway.

TOWN.	NAME OF INSTITUTION.	PRINCIPAL.
Sandwich	High School	Miss E. H. Sanborn.
" Center	Beede's Normal Institute	Mrs. A. E. R. Beede.
Seabrook	Dearborn Academy	Frank B. Sanborn.
Somersworth (Great Falls)	High School	J. W. V. Rich.
South Hampton	Barnard Academy	Ella A. Everett.
Strafford (Cen.)	Austin Academy	Isaac Copp.
Tilton	N. H. Con. Sem. and Female Col.	Rev. D. C. Knowles.
Walpole	High School	George Ransom.
Wakefield	Wakefield Academy	Fred A. Fernald.
Warner	Simonds High School	H. S. Roberts.
Washington	Tubbs's Union Academy	Miss Vina Dole.
Whitefield	High School	A. O. Abbott.
Wilton	High School	L. J. Tuck.
Winchester	High School	George Sherman.
Wolfeborough	Wolfeborough High School.	H. Tucker.

A LIST OF THE BOARDS OF EDUCATION

IN DISTRICTS ORGANIZED UNDER SPECIAL ACTS, AS RETURNED IN THE ANNUAL REPORT.

Ashland	W. F. Harris.	D. N. Pollard.	L. Webster.
	H. C. Dearborn.	S. C. Baker.	
Bethlehem	H. A. Hildreth.	Benj. Tucker.	Elisha Swett.
	Geo. T. Cruft.	Joseph Philbrick.	Geo. H. Turner.
Boscawen	John C. Pearson.	Willis G. Buxton.	Frank H. Gage.
Bradford	George F. Rand.	J. A. Gannet.	
Bristol	Mrs. W. A. Berry.	Mrs. R. E. Dearborn.	R. E. Dearborn.
	Geo. J. Judkins.	Mrs. L. W. Fling.	J. A. Bowler.
Charlestown	Jas. M. Whitaker.	F. W. Putnam.	Geo. S. Bond.
Colebrook	F. C. Harris.	Daniel Stevens.	F. B. Crawford.
	H. M. Leavitt.	C. S. Aldrich.	T. F. Johnson.
Concord	Henry J. Crippen, *Chairman.*		
E. Concord	Geo. H. Curtis, *Chairman.*		
W. Concord	Geo. Parmenter, *Chairman.*		
Penacook	Edmund H. Brown, *Chairman.*		
Deerfield	G. H. Towle.	F. D. Veasey.	T. W. Fowler.
Derry	Edmund R. Angell.	Mary L. Couch.	G. R. Bartlett.
	Maria B. Prescott.	C. H. Hood.	
Enfield	L. W. Currier.	E. B. Huse.	J. W. Patten.
Farmington	R. B. Foss.	A. B. Colbath.	W. H. Nute.
Gilford	Henry B. Quimby.	John B. Hendley.	Chas. L. Pulsifer.
Goffstown	Samuel Upton.	Edwin A. Blaisdell.	H. M. Campbell.
	Joseph S. Thompson.	Kendrick Kendall.	O. B. Pearce.
Hanover	J. W. Patterson.	R. Fletcher.	N. A. Frost.
	E. R. Ruggles.	John K. Lord.	B. T. Blanpied.
Haverhill	H. A. Remick.	Samuel B. Page.	
Hillsborough	M. H. Felt.	C. H. Quiss.	J. B. Smith.
	S. W. Holman.	J. B. Whittemore.	W. S. Loverin.
Keene	Joseph B. Abbott, *Ch.*	John W. Sturtevant.	Gardner C. Hill.
	Ira J. Prouty, *Clerk.*	George Tilden.	C. E. Harrington.
	Milton H. Spalter.	Henry S. Martin.	Chas. H. Hersey.
Laconia	J. W. Jewett.	Sarah W. Merrill.	C. B. Hibbard.
	W. L. Melcher.	D. B. Nelson.	J. F. Merrill.
Lancaster	J. I. Williams.	M. A. Hastings.	I. W. Drew.

Lebanon........	C. A. Dole.	Rev. W. H. Fish.	Rev. E. T. Farrill.
Lisbon..........			
Village........	John L. Foster.	S. H. Brigham.	G. F. Savage.
	L. B. Pratt.	A. A. Woolson.	W. H. Weston.
Sugar Hill....	S. S. Vickerson.	Fred H. Bowles.	
	Geo. W. Wells.	D. M. Aldrich.	
Littleton........	W. H. Bellows.	C. F. Eastman.	O. C. Hatch.
	B. F. Robinson.	A. R. Burton.	C. L. Clay.
	T. E. Sanger.	Geo. Farr.	
Meredith	Justus Erskine.	Wm. Neal.	Mrs. M. A. Norris.
	S. P. Everett.	Frank H. Cram.	Aaron S. Clough.
Newport........	J. W. Parmelee.	D. J. Mooney.	John McCrillis.
Northfield......	Charles T. Almey.	O. G. Morrison.	Mrs. Clara C. Hill.
Rochester	C. W. Brown.	Chas. W. Folsom.	F. H. Lunt.
	John L. Copp.	J. S. Cutler.	Jas. Worcester.
Rollinsford.....	O. S. Brown.	J. Q. A. Wentworth.	F. E. Brigham.
Somersworth...	Rev. J. M. Dutton.	A. A. Perkins.	
Tilton...........	Charles T. Almey.	O. G. Morrison.	Mrs. Clara C. Hill.
Walpole	Curtis R. Crowell.	Rev. Wm. H. Teel.	Sam'l H. Porter.
Whitefield......	Mrs. A. E. Sartwell, *Secretary*.		
Wolfeborough..	Joseph W. Goodwin, *Chairman*.		
	Jasper H. Warren.		

SUPERINTENDENT'S REPORT.

SUPERINTENDENT'S REPORT.

The returns from all the towns of the State have been carefully compiled, and the results will be found in the statistical tables of this report.

It will be seen that the number of school districts has been reduced from 1,890 to 275, and that the number of districts organized under special acts is only 46, which is six less than were reported the previous year. I desire also to call special attention to the fact that the schools numbering twelve scholars or less have decreased from 838 to 640, and the schools numbering six or less have decreased from 359 to 166. This has resulted from discontinuing 494 small schools that were not needed, but were necessarily kept up at a wasteful expenditure of public funds under the old system. Included in this number there were a few schools numbering more than twelve scholars. From the same cause, the average length of the schools for the whole State the past year has been 22.39 weeks, while the previous year we had but 20.37 weeks.

If we multiply this average increase of 2.02 by 2,276, the number of schools in the State, we shall have 4,598, which shows the total number of weeks of increase which the new law has given to the schools of the State.

This advantage has been given almost exclusively to what were formerly short schools. The desire to use up the surplus funds in the districts gave an unusual length to the schools during the last year under the old law. If we compare the length of the schools the first year under the new law with their length the last year but one under the old law, we find we have an increase of 5,553 weeks. This increase is the more marked when we find that we expended for teachers the last year of the old law $454,373.92, and only $444,045.58 for the first year under the new law.

The number of enrolled scholars given in the report of 1886 is 64,219, while this year we have only 60,770. This apparent decrease has resulted from the opening of parochial schools, and from the more accurate returns of the school boards.

The number of teachers employed in the public schools under the new law is 679 less than under the old. The average wages of male teachers per month the past year has been $41.03. The year previous it was $40.22. The average wages of female teachers the past year has been $24.46 per month, as against $23.56 the year before. There have been 154 towns in which teachers from normal schools have been employed the past year, and only 142 the year previous. The average attendance to each school of the State has increased from 16.16 in 1886 to 18.73 in 1887. These are some of the results of the new law.

THE NEW LAW.

The new school law has run the gauntlet of misrepresentation and abuse for a year, and has come forth stronger in itself and in the number of its friends than when it entered upon its course. No law ever encountered, at the outset, bitterer or more groundless prejudices than this, and none ever disarmed opposition more quickly, and demonstrated its power to benefit the State. Its enemies, without any respectable reason, as it seems to me, have antagonized it in every possible way, so that in some towns it has not accomplished the good that will be possible under more favorable circumstances. But wherever it has had a fair chance, it has been successful beyond expectation. The feeling of dissatisfaction at the first was so strong that several towns refused to vote the usual extra amount for school purposes, hoping thereby to discredit the law. But though the sum paid to teachers the past year is $10,328.34 less than last year, the average length of the schools for the whole State has been two weeks more than for the previous year. The length of the village schools has not materially varied from previous years, but the outlying schools have increased, in towns which have united their small schools, from one third to double their former length. This fact, coupled with the equally significant fact that the inconvenience from increased distance and the depreciation of real estate, which some predicted, have not been realized, has produced a favorable change in public opinion. The town reports, with hardly an exception, — and many of them were prepared by boards hostile to the law when elected, — comment favorably upon the results of the new system. There has been a more equitable distribution of educational opportunities than formerly, and, as a rule, better teachers have been employed and more careful supervision given to their work.

We cannot see why there should be any controversy about this law. It originated in the most patriotic and unselfish purpose to lift the educational interests of the people out of a system which had exhausted its power and furnished no hope of improvement. It has worked successfully elsewhere, but if it fails here its originators will be the first to ask for its repeal. All we desire is that it shall have a fair trial, and that the clamor of a few people, who imagine themselves aggrieved, shall not be allowed more consideration than the general welfare.

It should be borne in mind that our schools are not a system of private benevolence, but are an essential part of our plan of self-government; that they were created for the public welfare, and should be so organized and administered as to subserve this end.

Previous to 1805 the town was the educational, as it still is the political, unit; and hence taxes were levied upon the town for the impartial education of all children, not so much on their personal account as because the safety and well-being of society and the state demanded it. The equal distribution of school privileges is the defensible ground of such taxation. By dividing the towns into fifteen or twenty fractional units, and distributing the school funds to these in the proportion of their taxable property, we set up a theory of public instruction entirely different from the original foundation, and which has resulted in depriving a large share of the pupilage of the State of a part of the education to which they would have been entitled under the original establishment. By the constant decrease of the population and wealth of the rural districts, the children of our native population, who still lived upon the homesteads of their fathers, were growing up in comparative ignorance. If the old plan did not assume that to be poor was a crime, it did assume that the equal education of the children in a poor district was not essential to the general welfare. But even worse than this, — we were taxing ourselves, in many instances, by a "fiction of law," for the education of children in districts where there were no children to be educated, and it was only by an "enabling act" of the Court that such districts could use our funds, so accumulated, for other than educational objects. This folly and injustice will not be possible under the present system.

The act of the last session was designed to prevent a needless waste of public funds, and to destroy an inequality of educational privileges which was a reproach to free institutions and gradually degrading the intelligence of an important part of our people, and so blighting the power and prosperity of the State. To secure a more simple and efficient method of supervision and improve the character of the schools was the sole motive for the change. No man's rights, no man's real interests have been or can be affected by it adversely. It abolishes district boundaries made eighty years ago, under a condition of society which has passed away, but it leaves to the people as absolute a control of their schools as under the old system. We honor the old district school for the good it has done, but it must give way, as did the handloom and the wooden plow, to plans better suited to the condition of the age, and we shall make a mistake if we refuse to test the merits of what seems to be a more elastic system.

It has been said that the school district was a little republic, and that citizens learned the art of government in its meetings. This may do for rhetoric, but has little foundation in fact. Like the republic of Venice, it was more prolific of family feuds than of statesmanship. I observed that it was difficult to secure a quorum at its meetings, and when secured, if there was not some quarrel on the carpet, they were generally very stupid affairs. The town district meetings will be greatly superior for all educational purposes.

The introduction of the new system necessarily involved some unusual taxation by the town for the purchase of district property, and bore heavily upon those who heretofore had failed to provide suitable buildings for the education of their children. This we regretted, but it was just, as it only equalized the burden of taxation for the general welfare, and was casting bread upon the water to be returned many fold in the future. But this has passed, and will only be repeated in an attempt to return to the old system.

The new law has already proved itself more efficient and economical than that which it supplanted. We do not claim that it is perfect. It will doubtless be improved by judicious amendments, but, as it is, it would work with little friction but for the excepted districts. The exempted schools were forced into existence by the inadequacy of the old system, and were a standing protest against it. I do not at present feel at liberty to ask that they should be abolished, but should be glad if they would voluntarily surrender their isolated attitude, and, casting in their lot with others, help to advance all to a higher standard. Would it not be more patriotic and unselfish to do so? Should not the town be a unit in this fundamental interest now, as at the first? Would not the general welfare be advanced thereby? It would remove an element of discord from our towns, and when the system was reduced to working order, I believe no part would suffer from the change, but all would reach a higher standard of excellence.

History and, in these days of rapid development, our own observation teach us that mental and moral discipline secured in the acquisition of knowledge are the source of material prosperity and social elevation; that they are the conservative force which maintains the regular and steady progress of nations and brings that enlightened and independent judgment to the popular mind which is the essential safeguard of free institutions.

All who study the conditions which regulate the growth of society, all who reflect upon the peril which the waves of passionate and brutal ignorance daily breaking upon our shores portend to the republic, are deeply concerned for the increase and spread of intelligence. Modern facilities of intercourse expose us to danger from the ignorant and criminal classes of all lands. Isolation is impossible. Schools are the cheapest and strongest defence of civilized States. All our children must acquire at least the elements of science and be inspired with a love for our institutions. To provide them with anything less than the best opportunities in our power is criminal.

No State that would perpetuate its institutions, no State that would keep pace with the age in material improvements, no State that would advance the efficiency and character of its people, can afford to have any but the most approved system of public instruction. Where shall we find the best patterns, and of whom will it be wise for us to take counsel in such matters?

FREE TEXT-BOOKS.

By an act passed in 1883, any town or district may, at any lawful meeting, raise money, by taxation or otherwise, for supplying the scholars in the common schools with suitable text-books free of charge. A number of towns and cities in the State have adopted the law, and have been more than satisfied with the results. It has been found that school boards could purchase books for all the schools at less than two thirds the cost to private parties; that the plan gave to boards an easy method of securing a uniform system of text-books; enabled them to reduce the number of classes to reasonable limits, and so enhance the educational value of a majority of the schools.

We point with assurance and pride to our schools, open and free to all the children of the State, without distinction of nationality or social condition, as the source of public intelligence, prosperity, and safety. But are the schools, in fact, now free to all? Are there not children in nearly every community too poor to provide themselves with books and other essential helps to education, whose sensitive self-respect excludes them from the schoolroom, and will till text-books are free?

These children are not to blame for their poverty, and their education may be essential to the future well-being of the State, but they prefer ignorance to beggary.

It is an unexpected and instructive fact that the free text-book law of Massachusetts, since it became compulsory, has increased the general attendance upon the schools from five to ten per cent. In the high schools the increase has amounted in some instances to from fifteen to twenty per cent. Many children of the poor who now complete their education with the grammar school would avail themselves of a more advanced course if they could have free text-books. Perhaps the want of suitable clothing excludes some, but not many, and the number would be less if our young people would be more sensible in their style and cost of dressing.

Our present law of free text-books is permissive. I would recommend that the statute be made compulsory, that the schools may become more absolutely free to the poor, and more efficient and beneficial to all. The law is popular with teachers, parents, and scholars wherever it has been tested, and would seem to be the next step in the line of progress with us. With this system it will be easier to establish consecutive courses of study, now impossible by reason of a multitude of different books and classes, and the scholars will be ready for work on the first day of school.

TEACHERS' INSTITUTES.

The registered attendance and cost of each institute are given in the following table:

Counties.	Towns.	Attendance.	Expense.
Belknap	Lake Village	60	$143.70
Coös	Whitefield	45	135.48
Carroll	Ossipee	40	143.88
Cheshire	Keene	130	211.36
Grafton	Lebanon	112	177.75
Hillsborough	Manchester	213	219.95
Merrimack	Concord	117	205.92
Rockingham	Exeter	157	240.68
Strafford	Dover	195	250.29
Sullivan	Newport	78	188.05
		1,147	$1,917.06

The increased attendance of the teachers and of the people in the vicinage of the meetings indicates an appreciation of the work done at these meetings. Teachers who are interested in their duties and are anxious to improve will be present if possible, but those who have no heart in their work and care nothing for the quality of their service are not likely to attend, or, if they do, will seek recreation rather than improvement. But the schools are not closed nor the money of the State expended for the amusement of mere time-servers, and either school boards or the law should require them to improve such means as the government provides for the improvement of its system of public instruction. The chief object of the institute is to promote the professional knowledge and enkindle the zeal of teachers, but they sometimes tell us that they tire of wearisome repetition of the same subjects. It has been my purpose to vary the exercises as much as possible from year to year, and to provide for all grades, and present new lecturers at these meetings. It should be remembered, however, that our teachers change, that successive classes of children must be taught the same things, and that the curriculum of studies in our public schools is limited. We cannot always have something new, and should not complain till we have perfected our knowledge and methods in what we have. We and the incidents of life are new, but the great duties of life revolve in orbits, and return, year by year, to successive generations. Weariness of life is the plea of the suicide, and is untenable as an excuse for indifference. The teacher is no exception to the rule. He has no right to excuse himself from an earnest and helpful participation in whatever tends to elevate his calling because it is old and familiar. Teachers cannot excuse themselves from the institute because the ever-recurring duties of the school-room necessitate something of sameness in these meetings. They should find a perennial interest in the acquisition of new and improved methods, in advancing the character and standing of their profession, and in knitting more closely its bond of union.

I ask confidently for the co-operation of school officers and teachers in this good work.

THE NORMAL SCHOOL.

We are glad to report a year of unusual prosperity in this institution. Its growing numbers seem to indicate that our people are coming to realize the need and usefulness of such a seminary, and to appreciate the work which it is doing in preparing a class of trained teachers for the public schools of the State. The demand for teachers who have had some professional preparation for their calling is spreading among the people.

It is seen that, as a rule, they do the best work. We are learning that successful teaching is a science which does not ordinarily come by intuition, but requires both study and practice. It is seen that skill in the art is reached by mastering its principles and reducing them to practice under the direction of an experienced teacher, who is familiar with the history and philosophy of education. We cannot afford to be outstripped by sister States in the ability of those who mould the characters and shape the destinies of our youth. To have the best teachers is the requisite condition to maintaining our old-time reputation as the nurse of strong men and efficient women. They who affirm that the "former times were better than these" in the art of school-keeping are not well informed. We must keep up with the times, and that costs money, but it will be a profitable outlay. Our school has not been an expensive luxury, though it has required annual appropriations of public funds. Training schools for teachers are now established and maintained by all governments which educate their people, and are advocated by the wisest and most thoughtful men. But to be of the highest utility, they must be thoroughly equipped.

The following information is given as directed by law:

CALENDAR.

1887.

Spring term closes June 9.
Alumni reunion June 10.

SUMMER VACATION.

Fall term begins August 30.
Fall term closes November 17.
Winter term begins November 29.

1888.

Winter term closes February 23.
Spring term begins March 14.
Spring term closes June 8.

SUMMER VACATION.

Fall term begins August 29.

COURSE OF STUDY

to be completed in two years, arranged according to relation of subjects, and not to order of study:

Professional Study. School Organization and Management; Mental and Moral Philosophy; History and Science of Education; Art of Teaching.

Language. Reading; Grammar; Composition; English Language and Literature.

Mathematics. Arithmetic; Book-keeping; Algebra; Geometry.

Natural Science. Physics; Chemistry; Physiology and Hygiene; Botany; Geography, mathematical, political, and physical.

Miscellaneous. History; Civil Government and School Law; Writing; Drawing; Singing.

Common-school studies are taken up mainly as thorough reviews of the pupil's previous attainments.

Training in teaching, beginning the first year, increases in amount with successive terms, according to the pupil's preparation for it by study of principles and methods.

The course of study extends through two years, and each year is divided into three terms of the length, respectively, of twelve, thirteen, and thirteen weeks.

Those who cannot take the full course will be received for such time as they can give, and, as they receive due credit for all work done, they can resume the course at any future time.

Graduates and students of colleges, scientific schools, and other normal schools will receive credit by a transfer of records, and will receive the diploma of this school when they have accomplished the additional work needed for the completion of its course of study and training.

The essential elements in the qualifications of the teacher are personal character, scholarship, power of control, and skill in teaching. Fitness of character is demanded as a condition of admission to the Normal School; its course of study is adapted to assure adequate scholarship; power of control and skill in teaching are developed and tested by observation and practice in its model and training schools.

CONDITIONS OF ADMISSION.

Gentlemen must be seventeen years of age at entrance; ladies, sixteen. Candidates must present certificates of good moral character from some responsible person, and declare their intention to fit themselves to teach. They must be prepared to pass a satisfactory examination in arithmetic, through fractions; in geography, upon general principles of mathematical geography as laid down in common-school text-books, in general upon the continents, and in more detail upon the United States and New England; in grammar, reading, and spelling.

They must acknowledge their obligation to comply with all the regulations of the school, and the earnest attempt to fulfill their obligation in good faith is thec ondition of continuance in the school.

All pupils should be present the first day of the term, though in case of necessary absence pupils will be admitted later.

Graduates of a high school or academic course of three or four years will be admitted without examination, on presentation of certificate or diploma.

Those who purpose entering the school are requested to notify the principal of their intention as early as possible, that suitable arrangements may be made for them.

PROMOTION, GRADUATION, AND EMPLOYMENT.

A definite standard of proficiency in studies is demanded for promotion from class to class, but aside from this it is not found necessary to make distinctions of scholarship. Faithful attention to duty for its own sake is the surest passport to the honors of the school.

Students are graduated when they have satisfactorily completed the course of study, and upon graduation they receive a diploma. This diploma is a certificate of admission to the profession, and is received throughout the United States as evidence of professional character.

Graduates of the school are sought for good positions, and the demand for them is usually beyond the supply.

EXPENSES.

An incidental fee of $2 is due from each pupil at the beginning of each term. A part of the text-books required are furnished free, and others may be purchased at the school at reduced rates. Every student should bring a Bible and a good dictionary, and, for reference, such standard text-books as have been studied.

Students living on the line of the railroad, and wishing to board at home, can obtain tickets for the term at reduced rates. Apply to the principal for particulars.

Board at Normal Hall is at the rate of $3.75 per week. This includes current expenses of living, — board and room, light, heat, and washing of a limited number of pieces. For any period less than half a term, the board will be $4 a week. Those who wish to room alone will be accommodated so far as possible at $4 a week. Students can remain during the short winter and spring vacations at the price of table board merely.

On the first day of the term one half of the board-bill for the term is due from each pupil boarding at the hall, and the same amount at the middle of the term. These advance payments are necessary to the economical management of the hall.

Rooms may be obtained for self-boarding at reasonable rates. Information will at any time be given, and all desired arrangements made by the principal.

OBJECT OF THE SCHOOL.

The thorough training of teachers for their professional labors.

MEANS.

1. Apparatus for illustration of the various branches of science, and for the practical training of pupils in the care and use of apparatus.

2. A library, carefully selected, to facilitate the study and guide the researches of members of the school.

3. Model and training schools, illustrating the best methods of primary, grammar, and high-school organization and instruction.

METHODS.

1. Thorough instruction in the branches of study included in the course, with special reference to modes of teaching the same.

2. Cultivating, by modes of class work adopted, the skill in the use of apparatus and the facility in illustration, the self-reliance, the power of logical thought and of easy and correct expression, and the style of address, necessary to the successful teacher.

3. Study of mental and moral philosophy in their applications to self-culture and to education.

4. Study of the history and theory of education, and of modes of school organization, discipline, and instruction.

5. Practice in conducting recitations, and in giving oral lessons before classes and before the school, under the direction and criticism of the teachers.

6. Practice in teaching in the training schools, under the instruction and criticism of the principal and of the teachers of the training schools.

The means for directly professional training increase from term to term, and, as may be inferred, the benefits to be derived from continued connection with the school are correspondingly increased. Though all effort is made to render every connection with the school profitable, students will find it for their interest to enter upon the course with the purpose of completing it.

SUGGESTIONS TO CANDIDATES.

1. Read all the statements of this circular. Carefully

examine the course of study, and decide how much of it you have thoroughly accomplished, recognizing always the difference between the knowledge required by a teacher and that required by one who is merely expecting to become a general scholar.

2. Do not be too anxious to enter advanced classes. All classes have full work, and there will be no time in any class to make up back studies. Most of those who find the work difficult suffer from lack of thoroughness in elementary training, and in many cases this lack is not previously suspected. A work that is to be done but once in a lifetime should be done well.

3. Bring with you testimonials from some responsible person as to your moral character.

4. Bring with you, as useful for study or reference, all the text-books you have. Every pupil should be provided with a Bible and a good dictionary, and, if possible, with a good reference atlas.

5. Come expecting to work faithfully and honestly, to make study your first and only aim while here, prepared to make many sacrifices for your own good and the good of the school.

Friends of education are requested to bring this circular to the notice of those whose wants the normal schools are designed to meet, but none should be advised to enter who are lacking in the physical health, the mental capacity, and the moral character, necessary to success in the profession. It must be remembered that there are those of whom no amount of instruction and no thoroughness of training can make good teachers. *Application for board and for further information should be made to the principal.*

THE STATE TEACHERS' ASSOCIATION.

A generation has passed since this association of New Hampshire teachers was organized. Many of the good and able who were associated in its inception and early support have gone to their reward, and the teachers of to-day have entered into their labors. The association, like all similar societies, has had its periods of decline and revival, but through all its vicissitudes has had a steady growth to its present established position in the educational system of the State.

The teachers of to-day seem to realize their responsibility for its support and success, not simply as an act of loyalty to its founders, but as a service of duty to those who are to come after. Its constitution is a bond of professional unity, and its meetings minister to the professional zeal of its members. The last, like many of the later meetings, was numerously attended, and characterized by great earnestness and devotion to the legitimate purposes of the association. The papers and discussions were strictly educational; and while some treated of the broader questions of theory, as a rule the work of the meeting was confined to what was of immediate practical use in the school-room. We solicit the attendance of the teachers of the State generally to these meetings. They will find them not only of great personal interest and use, but by their presence they will discharge a duty which they owe to the work in which they are engaged.

The following is an abstract of the proceedings, taken from the record of the secretary, Mr. L. S. Hastings.

NEW HAMPSHIRE STATE TEACHERS' ASSOCIATION.

The thirty-third annual meeting of the State Teachers' Association was held at Concord, November 5 and 6.

There was a goodly attendance at the opening exercises, which began at City Hall at 11 o'clock, with the president, W. A. Robinson, in the chair.

After prayer by the Rev. Mr. Crane, of Concord, the president announced the following committees:

On Nomination of Officers. — Mr. C. P. Hall, of Hinsdale; Miss M. A. Mathes, of Portsmouth; Mr. C. C. Boynton, of Lebanon.

On Resolutions. — Mr. Isaac Walker, of Pembroke; Miss E. A. Folger, of Concord; Mr. C. C. Rounds, of Plymouth.

Voted, That the matter of a new constitution be referred to a committee of three, who shall report at a later session of this convention.

After explanations by the treasurer, the first regular speaker on the programme was introduced, — Prof. F. C. Robinson, of Bowdoin College; subject, "What can be done in a Short Course in Chemistry?" Prof. Robinson criticised the earlier practice of memorizing statements of formulæ from a text-book, and the later one of attempting to master the science of chemistry by laboratory work done by each pupil. He would have the work consist of experiments performed by each pupil, but would make such experiments simple, dealing very little with the permanent gases, and beginning with flame tests of the metals, taking care not to confuse the pupils by too much apparatus and too many chemicals. Flame work followed by blow-pipe work, studying incrustations and beads, and this by reagent tests. He advocated the idea of attempting less, and doing it more thoroughly. Thought less time than is usual should be given to chemical theory.

The president announced the Committee on Constitution, as follows: Mr. C. C. Rounds, of Plymouth; Mr. W. W. Allen, of Rochester; and Mr. George Sherman, of Winchester.

Miss Abbie M. White, of Nashua, spoke upon the subject of drawing. She gave a full statement of her work as a teacher of drawing in the schools of Nashua. Her account was clear and full, and, with the large exhibit of work done by her pupils, made it evident that this department of school work in Nashua had been attended with most valuable results.

SECOND SESSION — FRIDAY, P. M.

Primary section met in City Hall at 2 P. M. The first exercise was a paper by Miss L. C. Sanborn, of Franklin, on the subject "Play in its Moral Relation to Childhood." The dominant thought was that play as directed and controlled by the teacher may be made a means of moral training, the conditions surrounding the child being much the same as those which in after life will call for the exercise of the virtues, as patience, justice, veracity, charity. The reading of the paper was followed by a series of games by little children, intended to illustrate the writer's proposition.

A paper was then presented by Miss O. Adele Evers, principal of training school, Manchester, on the subject "Teaching Language." It was urged that there be definite, systematic, and thorough practice in composition, oral at first, afterwards oral and written, based upon the observation and familiar discussion of objects or pictures. After the reading of the paper Miss Evers conducted an exercise in oral composition with a class of eleven pupils from the Manchester Training School, of the average age of eight and one half years. The class first studied a picture placed before them, and then expressed, in appropriate language, the ideas they had gained.

The exercises of the afternoon closed with a paper on "Teaching Number" by Miss Nellie M. Towne, of Keene.

The Higher Section met at 2 o'clock in the courtroom.

Mr. C. V. W. Rich, of Great Falls, read a paper on the subject of the "Study of the Mechanical Powers." He urged the importance of making this study a part of the common-school course, and spoke of its practical advantages, and recommended that it be studied with abundant illustration by models of the simple machines.

The subject was not discussed by other members of the association.

Mr. C. P. Hall, of Hinsdale, then read a paper on the "Study of the Civil War." He recommended that the war be considered, or studied, under the following heads: 1. Causes and Anticipatory Events. 2. The War in Outline; the campaigns of each year being traced in their general course, details omitted. 3. The Military and Naval Leaders (biographical). 4. Peculiar Features: (*a*) Labors of sanitary and Christian commissions; (*b*) Use of ironclads and monitors; (*c*) Advantage proved of earthworks as compared with walls of masonry. 5. Gratitude to the fallen and surviving soldiers, as shown by cemeteries, monuments, soldiers' homes, preserved flags, Memorial Day, pensions. 6. The Awful Cost. 7. Its Results.

The paper was well received, and was followed by an interesting discussion, conducted by the following persons: General Carrington, U. S. A., of Boston; Superintendent Patterson, who thought that the service rendered by Congress during the war ought not to be overlooked; Miss Carlton, of Concord; Mr. Walker, Mr. Barlow, Mr. E. J. Goodwin, Mr. A. C. Stockin, and Mr. Metcalf, of Boston.

A part of the above discussion was upon the question, What history, besides that of the United States and England, ought to be taught in our schools?

A fine exhibit of art work, drawing, clay modeling, writing, etc., done by several schools in different parts of the State, was placed in the court-room, and received much attention. Especially noteworthy was the art work from Tilden Seminary, Lebanon.

EVENING SESSION.

Prof. H. E. Holt, of Boston, spoke upon "Methods in Teaching Music," and illustrated his methods with a class of primary pupils from the Concord schools. The exercise was a very pleasing one, and proved that there is no difficulty in teaching very young children to read music.

Mr. R. C. Metcalf, supervisor of schools, Boston, then spoke upon the subject of "Language and Grammar." The subject was handled in a most complete and masterly manner. He would have children study language for the purpose of learning how to use English in speaking and writing correctly, and with a fair degree of fluency. He gave valuable suggestions as to methods. He would have much more talking than writing. Under the other branch of his subject he made a strong plea for the rational study of grammar. This he defined as the study of language itself, not the learning its use. He outlined a course of grammar continuing through the sixth, seventh, and eighth years of the school course. He remarked, at the close, that he would teach grammar now more than he used to, but in a different way.

SECOND DAY — SATURDAY, A. M.

Prayer was offered by Mr. Walker, of Pembroke.

Mr. William A. Mowry, of Boston, spoke on the subject "Teachers' Lessons upon the Duties of Citizens." He made an earnest plea for the teaching of government or citizenship, its duties and responsibilities, in all grades of the public schools. He made the point, among many others, that the intelligence on which the republic must depend for its permanency is not intelligence in the subjects of arithmetic, grammar, or reading, but intelligence as to the duties and responsibilities of citizenship,— intelligence in regard to the history and institutions of our country.

Miss Christie A. Warden, of Hanover, then entertained the association by an exhibition of clay modeling. She rapidly produced models of such objects as vegetables, birds, hats, etc., while a class of teachers to whom she had given a few minutes' instruction imitated her in fashioning some of the less difficult forms.

Rev. A. E. Winship, of Boston, then spoke upon the subject of "Temperance Instruction in the Schools."

After some general suggestions, he proceeded to speak explicitly in regard to methods, enumerating: (*a*) Experiment, showing tangibly the evil effects of alcohol; (*b*) Use of text-books, a plenty of good books; (*c*) Psychological training in order to reach the heart and will as well as the intellect.

Under the last head he developed the idea that the teacher should train the pupils to control impulse, to choose the best circumstances, *i. e.*, those circumstances that will be elevating; and to imitate the good, the teacher himself setting such an example as the pupil may safely follow, and will be glad to follow.

Reports of Committees.

The Committee on Nominations presented the following names, and these persons were chosen without opposition:

President — W. A. Robinson, Franklin.

Counselors — C. C. Rounds, of Plymouth; C. H. Morss, of Portsmouth; E. H. Barlow, of Lebanon; George Sherman, of Winchester; Miss Laura Carlton, of Concord; Miss Abbie M. White, of Nashua; C. V. W. Rich, of Great Falls.

Secretary — L. S. Hastings, of Claremont.
Assistant Secretary — Miss Ellen A. Folger, of Concord.
Treasurer — J. W. Stetson, of Manchester.

The following resolutions were presented and adopted:

Resolved, By the teachers of New Hampshire in convention assembled, that the bill for National Aid to Education, known as the Blair bill, should become a law.

Resolved, That the thanks of the State Teachers' Association are due to the Legislature for the enactment of the law abolishing the school districts; and we express the hope that this beneficent legislation will not be reversed.

Resolved, That the teachers of New Hampshire are in favor of scientific temperance education, and they recognize it to be their duty to assist in its promotion.

Resolved, That the thanks of the association be returned to those educators from other States who have been present, and aided very much in making this meeting a success; also to the railroads and hotels for reduced rates, and to the city government for the free use of their hall.

The Committee on Constitution reported that a committee be appointed to draft a constitution for a professional association, and report next year. This part of the report was adopted, and the same committee was re-appointed; viz., Messrs. Rounds, Allen, and Sherman. The committee recommended that the programme for next year be so arranged that, in the general sessions of the association, subjects be presented involving general principles, and that in the sectional meetings the work be made specific and technical in character. Mr. Sherman felt obliged to resign as a member of the constitution committee. Mr. Boynton, of Lebanon, was appointed in his place.

The association then adjourned.

The following paper read at the meeting I include in this report for its intrinsic merits and educational value:

THE HISTORY OF THE CIVIL WAR: WHAT AND HOW MUCH SHALL BE TAUGHT.

BY PRINCIPAL C. P. HALL, HINSDALE, N. H.

The Civil War nominally covers a period of four years, but reaches back, in the causes which led to it, through two centuries and a half, and forward, in its results, through untold centuries. What and how much shall be taught, then, must depend somewhat upon how much of cause has been previously studied, and how much of result is to follow.

Keeping this in mind, I present the following outline, to be enlarged and developed in accordance with previous preparation, the time to be given, and the age or advancement of the pupils.

I. *The Causes of the War and its Anticipating Events.* It was not the mere rashness of young Athens at Coronea that caused the Peloponnesian war, which laid Greece waste for a quarter century, but the wide difference in the characteristics of the two peoples, dating back to the time of the migrations. Neither was it the mere naming of Prince Leopold as the prospective sovereign of Spain that caused the Franco-Prussian war, but the jealous rivalry of two great nations, fanned and kept alive by every political breeze since the days of Charles the Bold and Louis the German.

So here; the apple of discord was brought to this country with the first cargo of slaves in 1619. We can only say, in passing, that the North early freed her slaves; Georgia and North Carolina made conditions upon ceding their western territory that slavery should not be prohibited; Abolition societies were formed in 1774; Abolition papers were published early in this century; the cotton-gin was invented in 1793, which doubled the value of slave labor; Congress interdicted the slave trade in 1808, and made it a piracy in 1820.

At this time, climate, the habits and character of the people, the profit of slave labor for the plantations of the South and of free labor for the manufactories of the North, had developed rival interests and antagonisms between the two sections. It was the Puritan element of the one, which regarded our country as the home for freemen of all lands, and the aristocracy of the other, which regarded all labor as degrading, and hence the work of slaves. It was free labor *versus* slave labor. Hence their interests could not be the same, and they could not exist side by side in State or Territory.

Says another: "These antagonisms,—settled first by the Missouri Compromise of 1820, re-opened by the tariff of 1828, bursting forth in the nullification of 1832, pacified by Clay's compromise tariff, increased through the annexation of Texas and the subsequent war with Mexico, irritated by the Wilmot Proviso, lulled for a time by the compromise of 1850, awakened anew by the 'squatter sovereignty' policy of 1853, roused to fury by the agitation in Kansas, spread broadcast by the Dred Scott decision, the attempted execution of the Fugitive Slave Law, and the John Brown raid,—had now reached a point when war was the only remedy."

The election of Abraham Lincoln in November, 1860, was made the pivot upon which the result turned. Scarcely a month had passed when South Carolina seceded, and she was soon followed by the six other States of the extreme South. The following February their delegates met at Montgomery and organized the "Confederate States of America." The United States forts, arsenals, ships, etc., in these States were at once seized. President Buchanan did nothing. His cabinet, largely in sympathy with the South, had scattered the navy to distant ports. The army was small and also scattered. The feeling against coercion was quite prevalent at the North. President Lincoln was inaugurated, and still the North delayed with efforts to compromise, while the South was everywhere active in raising money and men, and preparing for the inevitable struggle.

And it came. On the 14th of April, 1861, Fort Sumter surrendered, and the war had begun.

II. *The War in Outline.* The news of the surrender flashed through the country. The very papers that announced it contained the call of the President for seventy-five thousand troops. The whole North was aroused and united. Party spirit gave way to war spirit. Three hundred thousand men responded to the "call," and within twenty-four hours regiments were *en route* for Washington. The fate of Fort Sumter unified the South as well as the North. Four other States hastened to join their fortunes with that of the Confederacy, and the capital was transferred to Richmond.

In tracing the war on to its close, — from Fort Sumter to Appomattox, — I would follow out the campaigns of each year, enlarging the prominent features of each, and closing the whole with a summary of what had been accomplished during the year. I would give very little time to the details of the campaigns, numbers of killed and wounded, etc., but keep as prominently before the pupil as possible the bearing which one campaign has upon those which are contemporary with it, or which precede or follow it. For instance, it is of far less importance for the pupil to know how many troops were engaged, or how many were killed or wounded, at the capture of Forts Henry and Donelson, or, in fact, to know how skillfully the gunboats were manœuvred, or the army managed, than it is for him to discover, with map before him, that their capture broke the line of Confederate defences, and opened the way for our forces to push on to Nashville and Pittsburg Landing, thus bringing on the battle of Shiloh. This, in turn, led to the capture of Memphis, the possession of the Memphis and Charleston Railroad, and by thus concentrating the Southern troops made it easier for Farragut to obtain New Orleans.

I would make the battle of Gettysburg very prominent, showing how it was the turning-point, — the Saratoga, — of the war; that the victories up to those first days of July, 1863, had been largely on the side of the Rebellion, especially at the East; but following that the bird of favorable omen perched upon our banners; and picturing what might have been had the result of this battle been against us. The movements in this battle were so varied, and military skill and strategy so well exhibited, that it might be described in detail, letting this answer for like details in all battles. The memorable charge of Pickett's division on the third day was probably not surpassed in grandeur and brave, determined purpose by any like charge during the war. It almost rivaled that of the Light Brigade at Balaklava! But the same determined purpose stood in their front, and just as the Ridge and the day seemed within their grasp, it crushed and turned them back, and Gettysburg was ours.

As the end of the struggle comes on, make the events which immediately precede Appomattox and those that cluster about it vivid, as befits the close of so terrible a conflict.

III. *Its Leaders.* As history is made up of the acts of men, it serves an excellent purpose to review it through the lives of its leaders.

Take your pupils with you to the leather store in Galena, Ill., in the spring of 1861, and introduce them to Mr. U. S. Grant. Watch him as he moves to the front as colonel of the 21st Illinois Regiment, and as he captures Fort Henry. Read his reply to General Buckner at Fort Donelson: "No terms but an unconditional and immediate surrender can be accepted. I propose to move immediately upon your works." Review the trying days at Pittsburg Landing and Shiloh. Follow him through the Vicksburg campaign and the battles around Chattanooga. Take them to the executive mansion at Washington while he receives from the hands of the President his commission as lieutenant-general of the armies. Note the hand of a master in the plans which followed for immediate and active work in every quarter. Go with him on that terrible march to Richmond, — terrible, but ever forward, though it might "take all summer." Sit down together in the siege about Richmond and Petersburg, and study the man while he holds the army of Lee in one hand with the grip of a mastiff, and with the other touches the wires that send Sherman on his "March to the Sea," Sheridan through his brilliant campaign in the Valley, Thomas to Nashville, Terry to Fort Fisher, and others to their places in the line, all with the same objective point, — the speedy crushing out of the rebellion. Finally, read to them the generous terms of surrender at Appomattox Court-house, written by himself. You can then point out to them the devoted patriotism, the firm purpose, the indomitable perseverance, the excellent judgment in the choice of subordinates, and the generous treatment of a foe, which made our Grant what he was as a man and a leader.

So, also, study the career of Sherman, especially on his "March to the Sea" and through the Carolinas; of Sheridan as a leader of cavalry, in his campaign against Early and in the closing events about Richmond; of McClellan in his Peninsula campaign and at Antietam; of Lee in his management of the army of Virginia; of Stonewall Jackson, whose life as a man and a soldier even his enemies must admire; and of others as time and circumstances may allow, never forgetting to show clearly the part each played in the great drama.

So far the story of the army. But the record of the navy is an important one, for was it not Commodore Foote who shared the honors of Forts Henry and Donelson? Was it not Commodore Porter who captured Fort Fisher? Was it not Admiral Farragut who opened the Mississippi, and, lashed to the rigging, sailed into Mobile Bay and closed its port against blockade-runners?

Behind both army and navy were our great-hearted President and his cabinet, and the story of their doing and daring, standing as they did between the army at the front and the people at home, must be told. With leading statesmen urging this policy and that; with Abolitionists urging the emancipation proclamation and slavery sympathizers opposing it; with mourning in thousands of homes and the resources of the country taxed to their utmost; with the cry of "peace" behind and a determined foe in front; with the jealous eye of foreign nations upon us, Abraham Lincoln held the helm of state with an anxious, trembling hand, but with a steadiness of purpose to bring the old ship safely through which has shown him to be the one whom Providence had raised up for the hour. The story of his tragic death belongs to the history of the war, together with the punishment of the conspirators.

Then, too, the "war governors" had not a little to do in shaping its history. The rapidity with which they raised and equipped the troops and pushed them to the front, even in excess of their quotas, showed to the world with what earnestness the North had joined in the strife. They constitute a galaxy of noble names, — Andrew, and Berry, and Sprague, and Morgan, and Curtin, and Morton, and Yates, and Fairchild are prominent among them.

Finally, our halls of congress were filled with men during those years who proved themselves equal to the emergency. The promptness with which they voted the appropriations, the "sinews of war," and acted in all emergencies, not only sustained the hands of the executive and encouraged the armies at the front, but maintained our character abroad.

IV. *Peculiar Features.* Under this head I mention some things which were peculiar to, or at least had never been made prominent in, the military history of our country.

The Sanitary and Christian Commissions did a work which had no parallel in the history of nations, and only approached in the Crimean war.

The former originated in the patriotism and love of the wives, and mothers, and sisters in the homes of our land, and it was largely through their instrumentality that the great work was accomplished. And the motives were strong ones. One eighth of all the soldiers who went into the war were under nineteen, and one half under twenty-three and a half. "My boy is at the front!" was the watchword then, and when the life of a dear one is at stake what sacrifice is too great, what hardship too severe, what obstacle too hard for the true woman?

So it proved in the work of the Commission. Women could and did bring about and execute plans for the relief of the soldiers which would have been impossible for men.

This Commission took form in the first part of the war, and continued its work long after the surrender. Some of its lines of work were these: the sending of skilled physicians and others to advise inexperienced surgeons and officers in regard to the sanitary condition of camps and hospitals; providing hospital steamers and hospital cars for the more comfortable transport of sick and wounded men; furnishing hospital supplies to supplement and enlarge those furnished by the government; a department of "special relief," to assist soldiers in getting back pay, in getting home on sick leave or getting back to their regiments, etc.; a hospital directory, where sick soldiers could be traced from one hospital to another; a battlefield relief, ready to act promptly with men and materials for the care of the wounded. During the week succeeding the battle of Antietam, 27,467 pieces of dry goods, 4,000 sets of hospital clothing, and 120 bales of blankets were furnished, and equally large figures of food and medical supplies. This is simply an example. The department of "special relief" furnished in all 4,500,000 meals, 1,000,000 night's lodgings, and obtained $2,500,000 back pay.

In time of scurvy, vegetables in car-loads were regularly sent to the hospitals, and four hundred tons of ice were sent to General Gillmore's army at Morris Island. In short, wherever and whenever relief could be furnished to suffering soldiers, there and then went the Commission. The collection of the supplies was equally systematic. Large depots were established in six leading cities, to which clothing, food, everything needed, was sent by societies organized throughout the North.

Immense fairs were held to obtain money, and private contributions were frequent, California alone sending $30,000 per month regularly. The total cash received was $4,924,000. This, with the value of materials given and the free transportation furnished, rounds up the total to an estimated $25,000,000.

As the work of the Sanitary Commission supplemented that of the surgeon, so did that of the Christian Commission enlarge and aid the work of the chaplain.

This latter was also organized in the fall of 1861 by the Young Men's Christian Associations of the country. The delegates of the Commission, numbering 4,859, included some of the most eminent ministers and laymen of the country. They served without pay, and were divided into three classes, one for work in the camps, another for hospital work, and a third, called "minute men," ready to go at a moment's notice to battlefields. Beside contributing as best they could to the physical necessities of all, they held religious meetings of various kinds, distributed a million and a half Bibles and Testaments, as many more hymn-books, eight million knapsack books, and more than eighteen million weekly religious newspapers. One of the classes of Mount Holyoke Seminary gave up the customary badges and sent the cost of them to the Commission. In the same spirit a large amount of their supplies was given by auxiliary societies and individuals all over the North. The summary of its receipts equals $6,291,107.

The number of last messages of the dying sent to dear friends at home, of kind deeds ministered to the suffering, of Christian words of counsel and cheer spoken to anxious souls by this band of devoted men, will never be known till that great day when the books are opened.

That the value of the work done by these organizations was recognized by all is attested by the facts: that their anniversary meetings were crowded to their utmost by persons of all classes and conditions in life, from the President and his cabinet to the humblest laborer; and that all their delegates and agents and stores of every kind were transported free by railroads and steamboats, while their messages by telegraph were sent without charge.

The system of organized bands of women-nurses for field and hospital work, introduced by Florence Nightingale, was enlarged, developed, and perfected in our war. The life of many a brave fellow was saved by the tender care of these dear women. They were like angels of mercy flitting about on their errands of love to the sick or wounded boys.

It was on the day of the grand review at Washington, just at the close of the war, that a group of soldiers upon crutches and with empty coat-sleeves stood watching the great procession as it moved past them. Suddenly one of them exclaims, "That is her, boys! that is her!" and the air resounds with their shouts, and they swing their hats and crutches with the earnestness that a soldier well knows. What has so aroused the hearts of these boys? Look! In yonder carriage rides a woman in plain attire; her face is cheerful but careworn, interesting but not beautiful, as the world views it; yet to these boys she is a queen, and her face radiant with the beauty which can only be painted by acts of kindness and love. Shall I tell you her story?

At the beginning of the war there lived among the Vermont hills a widow with five sons and one daughter. One after another the boys went into the army, and died upon the battlefield or in the hospital. Then said the daughter, "Must my brothers do all this and I do nothing?" She left the mother by the fireside and went to the front; and for nearly two years, with untiring energy and almost superhuman endurance, followed the army, binding up wounds and ministering to suffering ones in the midst of the carnage of battle; or stood by the little hospital cots by day and by night, carefully nursing the throbbing wound or burning fever of the occupants, writing their letters for them, speaking words of Christian comfort and cheer in their hours of pain and sadness, or watching with tender care by the side of the dying one. Her very presence in the room hushed the unclean or profane word, and contributed a tenderness to the character of the inmates which they had not known for years.

Such, in brief, was her work. Is it any wonder, then, that those boys almost worshiped her? Is it any wonder that the soldiers honor and love hundreds of others who did a like work? At the reunion of veterans at Weirs, two years ago, Mrs. Harriet Dame, the leader of our New Hampshire nurses, was received with an applause and tokens of honor scarcely second to that accorded to General Sheridan, and was no less a hero in the eyes of the old veterans.

The battle between the Monitor and Merrimack was a new departure in naval warfare, and may be described together with the whole system of ironclads and the part they had in the war. Rifled guns and cannon came into so general use during the war that they deserve mention. The Parrott gun, called the "Swamp Angel" on Morris Island, had a range of five miles. It was demonstrated by General Gillmore, at Fort Pulaski, that stone and brick forts could not stand before rifled cannon, hence those of earth and sand were the ones relied upon thereafter.

The importance of railroads in the movements of troops and supplies was never so fully demonstrated as during our war,— a fact which has abundance of illustration.

To illustrate the work of privateers, tell the story of the Alabama, and the claims resulting from her career. The treatment of our prisoners was a terrible feature, which we would forget if we could.

V. *Gratitude of Nation and People.* Under this head I would teach them of pensions, giving them statistics of amounts paid; and of national cemeteries, telling them that there are in all seventy-nine, containing 337,334 graves, of which number 308,331 were Union soldiers, the remainder being citizens and rebel prisoners of war; that the cemetery at Arlington Heights, opposite Washington, the old General Lee estate, contains 210 acres and over 15,000 graves; that each of these cemeteries has a superintendent, who keeps the shaven lawn and beautiful shrubbery and flower plats with a skill and taste befitting Greenwood or Mount Auburn. Teach them of monuments and memorial tablets erected in thousands of towns and villages throughout the land, marking the spot of desperate conflict at Gettysburg and other battlefields; of soldiers' homes for sick and disabled veterans; of the old flags carefully preserved in yonder capitol, and in those of other States; of Memorial Day and the money raised for its observance, the cessation of business and the gathering of the masses to keep alive the memories of those old days.

Teach all this, that from this teaching they may see that patriotism is appreciated in our land, and its people desire to honor those who have risked their lives in their defence. The meaning of Memorial Day should be fully understood, and the pupils be urged to have some part in its exercises, if possible, as an object lesson.

VI. *Its Fearful Cost.* Of the Northern army, 450,000 were killed or died of wounds and disease, and it is estimated that 265,000 more were crippled for life. Granting that the Southern army suffered as severely, we should have the appalling total of 1,400,000 men as its cost in human life. The public debt August 31, 1865, when it reached its greatest amount, was $2,844,000,000; and, in round numbers, $4,000,000,000 is its estimated cost in treasure to the North alone.

But figures cannot represent the sorrow of bereaved homes all over the land. Neither can they show the devastation which the tramp of armies caused throughout the South. Necessarily, the border States suffered most severely from the breaking up of homes and the tramp of the contending armies.

When the war broke out, I was teaching in southwest Missouri. I closed my school May 17, 1861, and in less than three months sixteen of my pupils had joined the Union army and nine the army of the South. Neighbors and friends, and even members of the same family, were in hostile array against each other. By the aid of statistics and a wise showing of facts like these, the pupils may be taught to realize something of what a civil war costs a people.

VII. *Its Results.* Standing at the front is the abolition of slavery. Note the steps in its progress: The Emancipation Proclamation and the Thirteenth Amendment, supplemented by the Fourteenth and Fifteenth Amendments. With the fall of slavery came a breaking down of many barriers to a free intercourse and exchange of thought between the two sections. Before the war, almost no lines of railroad ran from the North to the South; now an immense and rapidly increasing business has sprung up along the railroads, which have pushed into the South from every quarter. Then there was almost no migration between the sections; to-day the presence of Northern men and the enterprise which they carry with them are felt in the development of every State in the South. In less than two years $100,000,000 of Northern capital was invested in railways and other enterprises at the South. Then, churches and other organizations were rent asunder; now, they are reuniting. Then, there were virtually no free schools at the South; now, they are moving rapidly forward, to stand beside those of the North. Then, the people of either section did not understand those of the other; now, a four years' war has satisfied at least those who were engaged in it, that all the patriotism, bravery, and noble manhood are not to be found in any one section of the land. A kindly sympathy has sprung up between the sections which could not have been possible in times of slavery. The heart of the North responds quickly to the cry of yellow fever or the shock of the earthquake at the South, as does also that of the South to the desolations of fire and tornado at the North.

In September, 1883, I was one of a party of veterans who made an excursion to Shenandoah Valley to hold a reunion upon the field of Sheridan's battle of the Opequan. In the fall of 1864, we had fought the army of Early up and down that valley, and they gave us plenty to do and a warm reception. But the reception which we received at the hands of the Virginians upon this latter visit was equally warm and in marked contrast with the former. Two decades had worked wondrous changes. A band of music met us at Harper's Ferry, twenty miles this side of Winchester. Arriving at Winchester, we were escorted by companies of militia and Confederate veterans, with three bands of music, through streets lined with citizens of both races, and decked with the stars and stripes on every hand, to the City Hall. Here we partook of a bountiful banquet, furnished at the city's expense, and served by many of the Southern veterans. In the center, back of the stage, was a large cartoon showing two clasped hands, with the words "Virginia welcomes New England"; and on one side a scene of war with the date "1864"; on the other, one of peace, marked "1883." We camped for four days upon the old battlefield, holding camp-fires each evening, with an attendance of from two to three thousand from the city and adjoining country. The platform erected for the speakers was beautifully decorated with flags and bunting, holding in their folds the names of Grant and Lee, Sheridan and Jackson. From that platform veterans of both armies spoke at the camp-fires words such as brave men may speak, but of unfaltering devotion to the old flag. After decorating the graves of our New Hampshire boys, one sunny afternoon, with flowers furnished by Virginia ladies, it was proposed to go to the Confederate cemetery and decorate the monument to their "unknown dead." We did so, and the hearts of the most bitter were softened. At Harrisonburg, eighty miles farther up the valley, we received a similar welcome, and the citizens almost rivaled those of Winchester in the extent of their hospitality. In September of this year a party from Winchester, Va., made an excursion to the southwest part of our State. They remained a week as our guests, and our citizens vied with each other in their efforts to make their stay with us a delight, and, if I may judge from letters received and resolutions passed since their return, our efforts were not in vain.

Briefly, these two exchange visits, and others like them which have been made in other parts of the country, were the most delightful possible, because made between two sections which have been supposed to have no interests in common, and hence were full of surprises. They were not possible before the war, and could not have been possible while slavery existed. Finally, the barriers between North and South are well-nigh broken down, and ties of common interest are developing in education, manufactures, commerce, moral reform, and politics even, which assure all peoples at home and abroad that we are a nation, "now and forever, one and inseparable."

THE SCHOOLHOUSES OF THE STATE.

Deeming the facts brought to light in this report by the secretary of the State Board of Health of great value to the educational interests of the State, I have inserted it at the close of this report, that it may be brought to the attention of some who might not otherwise see it.

SANITARY SURVEY OF SCHOOLHOUSES.

A sanitary survey of the schoolhouses of New Hampshire was commenced by the State Board of Health about two years ago. A blank book containing fifty questions was prepared and sent directly to the teachers. In addition to the questions, a sketch of the ground plan of the house was asked for, and a page divided into squares was appended in order that the teacher might be able to draw the plan readily to any given scale.

The questions embraced all the important points connected with schoolhouse sanitation. The size of the schoolhouse, also the size of the different rooms, was obtained by actual measurement, and by a comparison of these in the report their accuracy was in a measure proven. Reports were received from one thousand two hundred and twenty-eight schoolhouses, and the chief facts obtained are contained in the tables below. Blanks with apparent errors were returned for correction. The amount of cubic space in many of the rooms is actually less than that given in the table, since the entry is often built into the school-room, and in computing the cubic space this was not deducted. The teacher is not included in the "average attendance," which would have reduced the amount of air-space per pupil below the figures given in the table. Therefore the schoolhouses are represented to be in a somewhat better condition than actually exists. In the tables herewith given, all fractions are dropped, and the nearest whole number substituted. It is believed that the reports represent an average of the schoolhouses of the State, exclusive of the cities. That some errors exist there is no doubt, but they cannot be sufficient to vary the aggregate results to any extent, or change the deductions which must be drawn from an examination of the tables.

The object in presenting these facts is to call the attention of school authorities to the faults that exist in our schoolhouse architecture, and to secure legislation that will make it obligatory upon boards of education to construct all schoolhouses in the future upon some approved sanitary plan.

TABLE No. I.

SHOWING SEATING CAPACITY AND AVERAGE ATTENDANCE.

	Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 60.	Over 60.	Total number of schools.	Total seating capacity.	Total average attendance.
ROCKINGHAM COUNTY.															
Seating capacity in			1	7	26	6	28	15	26	18	29	19	175	7,103	
Average attendance in	6	25	32	25	22	15	14	13	7	4	9	3	175		3,939
STRAFFORD COUNTY.															
Seating capacity in				8	10	9	17	6	18	16	13	9	106	5,196	
Average attendance in	4	13	25	10	7	9	10	12	6	5	2	3	106		3,471
BELKNAP COUNTY.															
Seating capacity in			1	4	12	5	27	6	11	4	10	4	84	2,988	
Average attendance in	2	21	22	13	4	5	1	5	6	3	2		84		1,545
CARROLL COUNTY.															
Seating capacity in			1	6	16	8	20	5	6	2	7	8	79	2,741	
Average attendance in	2	15	22	15	12	5	2	2	1	1	2		79		1,316
MERRIMACK COUNTY.															
Seating capacity in		1	3	21	52	14	38	10	28	5	8	8	188	5,903	
Average attendance in	16	61	51	22	18	4	9	4	3				188		2,484
HILLSBOROUGH COUNTY.															
Seating capacity in			3	15	30	19	31	13	18	26	12	5	172	5,860	
Average attendance in	10	38	45	19	11	12	11	7	10	6	3		172		3,163
CHESHIRE COUNTY.															
Seating capacity in		1	5	9	27	10	22	9	20	15	15	11	144	5,149	
Average attendance in	12	34	26	17	14	9	8	5	7	8	3	1	144		2,719
SULLIVAN COUNTY.															
Seating capacity in		1	5	18	21	7	18	5	14	3	3	4	99	2,950	
Average attendance in	2	39	28	8	7	5	6	3	1				99		1,371
GRAFTON COUNTY.															
Seating capacity in		1	5	19	32	5	25	8	13	1	2	3	114	3,205	
Average attendance in	8	35	27	20	8	8	3	1	1	1	2		114		1,606
COOS COUNTY.															
Seating capacity in			2	10	14	7	10	3	6	1	7	7	67	2,241	
Average attendance in		13	17	14	5	3	4	5	1	1	4		67		1,343
Total number school-rooms.													1,228		

TABLE No. II.

RELATING TO SEATING CAPACITY AND AVERAGE ATTENDANCE.

COUNTIES.		
Rockingham	Per cent of average attendance to seating capacity	55
	Number of schools in which average attendance exceeds seating capacity	7
	Average seating capacity	40
	Average attendance for all the schools	22
Strafford	Per cent of average attendance to seating capacity	66
	Number of schools in which average attendance exceeds seating capacity	
	Average seating capacity	49
	Average attendance for all the schools	32
Belknap	Per cent of average attendance to seating capacity	51
	Number of schools in which average attendance exceeds seating capacity	1
	Average seating capacity	35
	Average attendance for all the schools	18
Carroll	Per cent of average attendance to seating capacity	48
	Number of schools in which average attendance exceeds seating capacity	
	Average seating capacity	34
	Average attendance for all the schools	16
Merrimack	Per cent of average attendance to seating capacity	42
	Number of schools in which average attendance exceeds seating capacity	1
	Average seating capacity	30
	Average attendance for all the schools	13
Hillsborough	Per cent of average attendance to seating capacity	53
	Number of schools in which average attendance exceeds seating capacity	1
	Average seating capacity	34
	Average attendance for all the schools	18
Cheshire	Per cent of average attendance to seating capacity	52
	Number of schools in which average attendance exceeds seating capacity	1
	Average seating capacity	34
	Average attendance for all the schools	18
Sullivan	Per cent of average attendance to seating capacity	46
	Number of schools in which average attendance exceeds seating capacity	1
	Average seating capacity	29
	Average attendance for all the schools	14

TABLE No. II — *Continued.*

COUNTIES.		
Grafton	Per cent of average attendance to seating capacity	50
	Number of schools in which average attendance exceeds seating capacity	3
	Average seating capacity	28
	Average attendance for all the schools	14
Coös	Per cent of average attendance to seating capacity	59
	Number of schools in which average attendance exceeds seating capacity	4
	Average seating capacity	33
	Average attendance for all the schools	20

Some interesting facts are brought out in the above tables. It will be seen that as a rule the schools are not overcrowded in respect to the actual attendance; but a careful examination of the individual reports on file in the office of this Board shows that the subject of space per scholar was not considered at all in the construction of a majority of the schoolhouses reported upon. This fact is also made evident upon the examination of tables Nos. 3 and 4. Table No. 2 shows that in nineteen school-rooms the average daily attendance exceeded the seating capacity. These schools must be regarded as very much overcrowded; and even if the average daily attendance of many of the school-rooms only equaled or nearly equaled the seating capacity they would still be overcrowded. If the entire seating capacity of these rooms were occupied, a state of overcrowding would exist that must be attended with great danger to all and serious results to many, because there are too many seats for the cubic capacity of the room.

TABLE No. III.

SHOWING AMOUNT OF AIR IN CUBIC FEET TO EACH SEAT AND ATTENDANT.

	Under 50.	50 to 100.	100 to 150.	150 to 200.	200 to 250.	250 to 300.	300 to 350.	350 to 400.	400 to 450.	450 to 500.	Over 500.
ROCKINGHAM COUNTY.											
Cubic feet of air to each seat in........		13	60	59	26	10	3	3		1	1
Cubic feet of air to each attendant in...		1	7	23	22	29	23	15	6	7	37
STRAFFORD COUNTY.											
Cubic feet of air to each seat in.........	1	8	25	29	22	6	5	2	5		1
Cubic feet of air to each attendant in..		3	3	4	14	13	18	13	7	5	23
BELKNAP COUNTY.											
Cubic feet of air to each seat in.........		7	28	34	10	1					1
Cubic feet of air to each attendant in ..			3	9	13	10	9	4	8	7	19
CARROLL COUNTY.											
Cubic feet of air to each seat in.........		17	32	15	6	3	2				
Cubic feet of air to each attendant in...			5	11	13	7	9	3	5	6	13
MERRIMACK COUNTY.											
Cubic feet of air to each seat in.........	1	19	69	59	19	10	5	1			2
Cubic feet of air to each attendant in ..	1		4	10	14	22	20	16	20	13	61
HILLSBOROUGH COUNTY.											
Cubic feet of air to each seat in.........		10	59	46	23	35	2	6			1
Cubic feet of air to each attendant in...			2	10	17	35	13	18	15	6	51
CHESHIRE COUNTY.											
Cubic feet of air to each seat in.........		5	43	45	18	23	5	3			1
Cubic feet of air to each attendant in...			3	8	14	17	15	16	11	11	45
SULLIVAN COUNTY.											
Cubic feet of air to each seat in..... ...	1	12	34	30	12	4	2	3			
Cubic feet of air to each attendant in...		3	8	7	7	10	7	10	6	9	31
GRAFTON COUNTY.											
Cubic feet of air to each seat in..... ...		10	45	41	15	4	1	1	1	1	1
Cubic feet of air to each attendant in..		1	3	11	16	19	9	8	13	3	25
COOS COUNTY.											
Cubic feet of air to each seat in.........	1	5	41	19	3	1	1		1		
Cubic feet of air to each attendant in...		4	1	14	16	7	7	9	4	2	4

TABLE No. IV.

SHOWING AVERAGE CUBIC FEET OF AIR TO EACH SEAT AND ATTENDANT, BY COUNTIES.

COUNTIES.		
Rockingham	Average cubic feet of air to each seat Average cubic feet of air to each attendant	176 400
Strafford	Average cubic feet of air to each seat Average cubic feet of air to each attendant	196 303
Belknap	Average cubic feet of air to each seat Average cubic feet of air to each attendant	158 435
Carroll	Average cubic feet of air to each seat Average cubic feet of air to each attendant	141 376
Merrimack	Average cubic feet of air to each seat Average cubic feet of air to each attendant	168 490
Hillsborough	Average cubic feet of air to each seat Average cubic feet of air to each attendant	244 443
Cheshire	Average cubic feet of air to each seat Average cubic feet of air to each attendant	175 567
Sullivan	Average cubic feet of air to each seat Average cubic feet of air to each attendant	166 505
Grafton	Average cubic feet of air to each seat Average cubic feet of air to each attendant	165 409
Coös	Average cubic feet of air to each seat Average cubic feet of air to each attendant	149 280

Tables Nos. 3 and 4 conclusively prove that our schoolhouses were constructed without any reference to the amount of air-space which science and experience have proved necessary for the welfare of the pupil. While authorities differ somewhat as to the amount of cubic air-space per pupil required in a school-room, the minimum figures given by standard authorities are greater than those found in the above tables. The tables show that the average cubic air-space per seat for all the schools reported upon is 173.8 feet.

In the regulations which govern the construction of schoolhouses in the Province of Ontario, it is provided that "in each room the area should be at least twelve square feet on the floor, and there should be at least two hundred and fifty cubic feet of air-space for each pupil." In reference to this regulation the minister of education said that he had placed the figures at the lowest possible point consistent with safety to the health of the pupils in the schools.

Mr. W. R. Briggs, the architect of the Bridgeport schoolhouse, of Connecticut, allowed two hundred and sixty-six cubic feet in corner rooms, designed for fifty scholars; in the middle rooms, two hundred and seventy-three cubic feet; and in the large room, sufficient for two hundred pupils, four hundred and forty-seven cubic feet per seat. Professor Kedzie, of Michigan, believes that three hundred cubic feet per seat should be allowed. Dr. Lincoln, of Boston, an eminent authority upon this subject, recommends at least two hundred and fifty cubic feet per head.

From these figures it will be seen that the space per seat in these school-rooms is much to small. The amount differs in different counties, the nearest approximate to correctness being in Hillsborough county, averaging two hundred and forty-four cubic feet per seat; and the lowest in Carroll county, one hundred and forty-one cubic feet per seat. The figures given as allowable by the best authorities, as stated above, are based upon the supposition that with this amount of space suitable provisions for ventilating the rooms are to be maintained. In our schoolhouses included in this table nothing of the kind exists, so the amount of cubic space is of very little consequence, since any practicable allowance of air would soon become vitiated and unfit for respiration without ventilation.

In the report upon the school-rooms of Ontario the committee on school hygiene expressed it as their opinion that five hundred cubic feet of air-space per pupil were sufficient with six renewals of fresh air per hour. If the cubic space were to be reduced below these figures, more frequent renewals of fresh air would be necessary. Applied to the construction of our schoolhouses the defect is an exceedingly dangerous one, but in practice it is not quite so bad, since most of the rooms are not filled to their full seating capacity. The cubic air-space per scholar for the State, based upon the average attendance, is four hundred and twenty cubic feet, the largest average amount per scholar being in Cheshire county, five hundred and sixty-seven cubic feet; and the smallest, two hundred and eighty cubic feet, in Coös county. This average is of importance, however, only in showing that the cubic space per scholar is ample, with ventilation, in some of our schools, while in others overcrowding would still exist with the most perfect methods of ventilation, if all the seats were occupied. The favorable circumstances, wherever found, are the result of existing circumstances rather than design, those circumstances being a very limited number of scholars in the given district. This table proves that our schoolhouses are not properly constructed, independent of the question of lighting and ventilation. Almost without exception, too many seats are placed in the school-rooms.

Table No. 5 shows the time the average attendance would render the air unfit for respiration in 858 individual schools. These 858 schools, or sixty-nine per cent of the total number reported, are without any means of ventilation other than windows and doors, which cannot be utilized to any extent in cold weather.

TABLE No. V.

GIVING THE NUMBER OF UNVENTILATED SCHOOLHOUSES, WITH THE TIME THE AVERAGE ATTENDANCE WOULD RENDER THE AIR UNFIT FOR RESPIRATION.

COUNTIES.	1 minute.	2 minutes.	3 minutes.	4 minutes.	5 minutes.	6 minutes.	7 minutes.	8 minutes.	9 minutes.	10 minutes.	11 minutes.	12 minutes.	13 minutes.	14 minutes.	15 minutes.	16 minutes.	17 minutes.	18 minutes.	19 minutes.	20 minutes.	20 to 25.	25 to 30.	30 to 40.	40 to 50.	50 to 60.	1 to 1½ hours.	1½ to 2 hours.	Total number of unventilated schoolhouses.
Rockingham .			2	2	4	12	10	15	5	10	8	5	7	1	1	3	1	4			4	2	1		2			99
Strafford		1	2		4	3	7	6	6	9	5	4	9	2	2	1	2	1		1	5	1	1	1		1		74
Belknap.......				3	1	3	6	15	4	1	5	1		5	1	4	2	2			4	1	4		2			54
Carroll			1	3	4	4	9	6	3	3	6		2	1	3	3	1	2	1	1	1	2	1	1				58
Merrimack....	1			2	2	6	7	9	16	10	14	7	9	15	8	7	11	7	4	5	19	11		6		2	2	180
Hillsborough..	1			1		6	6	9	11	5	6	6	8	7	2	3	4	3	8		2	2	6			1		97
Cheshire.......				3	3	1	6	7	6	6	2	6	7	3	2	3	3		4	3	6	5	2	1	1			80
Sullivan	1		1	1	4	2	4	4	5	3	5	5	4	3	4	2	5	5	1	1	7	1	3					71
Grafton........		1		2	4	5	5	10	9	5	2	6	5	6	3	2	5	2			4	6	1	3	1			87
Coös		3	1	2	4	9	7	6	4	1	2	8	1	3	1	1	2	1		1		1						58
Totals	3	5	7	19	30	51	67	87	69	53	55	48	52	46	27	29	36	27	18	12	52	32	19	12	6	4	2	858

It is conceded that in schools composed of children of varying ages, at least 1,800 cubic feet of fresh air per hour are required for each pupil. Many authorities place the figures much higher. Thirty cubic feet of fresh air per scholar are required each minute in order that the carbonic-acid gas thrown off by the lungs shall not accumulate to an extent of more than six parts per 10,000, and to purify and destroy other organic matters eliminated by the lungs.

A German medical commission, in a report upon schoolhouse construction, places the minimum amount of fresh air for each pupil at 2,120 cubic feet per hour. The difference between these figures as given by the best authorities and no ventilation whatever must lead every thoughtful person to believe that our schoolhouses are constructed upon principles exceedingly dangerous to the health of the pupil. It is probably true that the figures somewhat magnify the actual defects in the schoolhouses represented, since the walls of the rooms are not totally impervious to air, and more or less is undoubtedly admitted by the crevices around the windows and doors, even with the school-room closed. This would in a slight degree lessen the defects as shown by the table, but would not materially impair the force of the statements made.

To appreciate the defects which table No. 6 exhibits, it is necessary to understand the amount of lighting space needful to secure the best results in the school-room. This has been estimated by various specialists, a majority of whom agree that the total lighting area of a room should not be less than 25 per cent of its floor area. Some authorities, however, have placed the figures as low as 16⅔ per cent (one sixth of the floor area), while others have considered 30 per cent as little enough. It is certain that not less than the minimum amount stated above should be considered sufficient for any school-room, how-

TABLE No. VI.

SHOWING PER CENT OF LIGHTING SPACE TO FLOOR SPACE, ALSO HOW THE WINDOWS ARE SHADED.

COUNTIES.	Under 5 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.	11 per cent.	12 per cent.	13 per cent.	14 per cent.	15 per cent.	16 per cent.	17 per cent.	18 per cent.	19 per cent.	20 per cent.	20 to 25 per cent.	25 to 30 per cent.	Over 30 per cent.	WINDOW SHADES.				
																					Blinds.	Curtains.	Both.	Shutters.	None.
Rockingham	1	3	3	5	12	16	8	22	15	15	21	14	8	11	7	5	4	4	2		72	73	10	2	17
Strafford		2		5	5	7	8	7	9	16	11	3	8	3	2	2	3	11	1	1	67	18	2	2	26
Belknap			4	7	8	13	8	7	10	4	8	7		3	2			1			12	33	4		37
Carroll	1	3	3	7	11	8	4	8	10	6	4	2	4	1			1	1	1		12	22		3	47
Merrimack	1	2	7	6	13	18	21	28	17	20	8	7	8	4	7	11	2	3	6	1	41	78	9	2	64
Hillsborough	3	1	12	9	19	19	25	22	19	14	7	9	2	7	1	6	1	3	8	1	83	45	41	4	19
Cheshire	2		5	10	12	18	15	22	15	13	9	4	7	3	2	3	1	5	1		64	32	33	2	13
Sullivan	2	2	5	5	9	11	6	7	10	7	9	4	3	5	5	3	1	4	1		25	25	17	3	30
Grafton		1	5	6	11	10	16	15	15	10	8	3	6	3	5	1		3			19	39	6	2	60
Coös	1	1	2	1	7	4	13	6	7	6	9	2	3	1	3	1		1	1		23	14	2	1	34
Totals	11	15	46	61	107	124	124	144	127	111	94	55	49	41	34	32	13	36	21	3	418	379	124	21	347

ever favorably situated. A glance at table No. 6 shows that a majority of the school-rooms fall far below any allowable standard in this respect. In 1,068 school-rooms the lighting area is less than 16⅔ per cent of the floor area, and in 488 rooms it does not exceed 10 per cent, and in 26 rooms it is 5 per cent and under. It will therefore be seen that according to the best authorities our school-rooms are insufficiently lighted in a majority of cases. In 347 rooms the windows are protected by neither blinds, curtains, or shutters.

TABLE No. VII.

SHOWING LOCATION OF WINDOWS.

COUNTIES.	Right.	Left.	Front.	Behind.	On all sides.	Right and left.	Behind and front.	Right and front.	Right and behind.	Left and behind.	Right, left, and behind.	Right, left, and front.	Right, front, and behind.	Left, front, and behind.
Rockingham ...				2	77	19	1		3	2	57	17	3	1
Strafford........	1			5	24	12	1		6	9	49	6	2	1
Belknap				1	23	9	1		3	3	35	1	4	6
Carroll..........				1	24	8	1				45	4	2	
Merrimack					57	26	4	1	2	2	86	5	5	6
Hillsborough...	4	4			23	32	3		4	7	101	5	2	4
Cheshire........				2	5	2			6	7	119	3	3	4
Sullivan				7	7	6	3				72	2	1	3
Grafton			1	5	18	12	6		2		62	4	8	3
Coös		1		3	13	6			2	2	46	3	1	
Totals.......	5	5	1	26	271	132	20	1	28	32	672	50	31	28

Table No. 7 alone is sufficient to condemn our schoolhouse architecture. If it had been the direct object to destroy the eyesight of the pupils, better plans could not have been produced than evidently exist in regard to location of windows in these rooms. The arrangement in most of the rooms is abominable, and cannot fail to have an exceedingly bad effect upon the eyesight of the scholars. In four hundred and two rooms there are windows directly in front of the pupils, a condition which should be prohibited by the strictest law. In two hundred and seventy-one rooms light is admitted from all sides, and in seven hundred and eighty-one from three sides.

It is universally conceded by all experts in school hygiene that, whenever possible, light should be admitted from one side only, and in no case from more than two sides of the room. In the latter case it must be in such a manner as not to produce cross-lights. In Germany the law requires that the light shall be admitted from the ceiling or from one side only. Dr. Buck, in his treatise on hygiene, informs us that short-sightedness, dimness, and darkness of sight are increasing generally among school children, and that defective eyesight is much greater where the school-rooms are poorly planned in regard to window arrangement.

TABLE No. VIII.

SHOWING FACTS RELATING TO WATER SUPPLY.

COUNTIES.	Well.	Neighbor's well.	Spring.	Pump.	Brook.	River.	Pond.	Public water supply.	None.	Is it in danger of pollution?		Is it from a high or low source?		
										Yes.	No.	High.	Low.	Medium.
Rockingham	75	54	20	6	1		1	4	19	29	106	91	36	19
Strafford	35	23	19	1	1		5	13	11	12	55	71	20	4
Belknap	28	29	9				1		14	6	51	48	14	4
Carroll	18	18	16	2	7		1	2	16	6	37	48	7	1
Merrimack	58	75	21	1	5				33	10	14	113	18	7
Hillsborough	51	53	22	2	4	1		33	18	6	90	112	24	9
Cheshire	21	50	29	3	6		2	17	19	5	57	97	13	4
Sullivan	19	30	32	1	6				10	4	45	62	11	6
Grafton	18	20	50	2	9	1			24	8	50	75	13	1
Coös	9	20	26		3			1	16	4	20	40	8	1
Totals	332	372	244	18	42	2	10	70	180	90	525	757	164	56

TABLE No. IX.

SHOWING FACTS RELATING TO PRIVIES, WATER-CLOSETS, ETC.

COUNTIES.	None.	One.	Two or more.	Separate for the sexes.	Not separated for sexes.	CONDITION.			DISTANCE FROM SCHOOLHOUSE.						Other nuisances.
						Good.	Fair.	Bad.	Connected.	Less than 5 feet.	Between 5 and 10 feet.	Between 10 and 20 feet.	Between 20 and 40 feet.	Over 40 feet.	
Rockingham	6	50	127	129	45	98	34	39	13	7	22	59	53	7	14
Strafford	11	21	80	80	21	63	11	26	10	1	12	26	30	18	12
Belknap	2	49	35	35	48	42	11	30	26	1	11	24	12	6	7
Carroll	24	37	24	25	34	20	13	25	9	6	6	21	10	4	8
Merrimack	14	15	63	64	103	98	20	65	54	10	36	42	32	6	20
Hillsborough	5	93	92	93	93	123	32	29	47	12	21	43	20	13	14
Cheshire	1	94	56	52	86	71	25	51	41	16	16	39	16	3	21
Sullivan	3	70	28	27	71	44	12	42	18	10	12	20	17	6	5
Grafton	11	83	33	33	83	48	25	38	32	8	10	30	11	8	11
Coös	5	47	25	27	43	26	9	34	24	7	8	15	6	2	6
Totals	82	559	563	565	627	633	192	379	274	78	154	319	207	73	118

Short-sightedness is very generally produced in the school-room. So well known is this fact that it has been classed as an affection belonging principally to the educated. It is no wonder that these schools report six hundred near-sighted pupils, as will be seen by reference to table No. 10.

It will be seen that 180 schools have no water supply whatever, 372 depend upon neighbors' wells, 42 obtain water from brooks, 2 from rivers, while the reports do not state whether those under " well " and " spring " belong to the schools or not. In 90 schools the supply is reported to be in danger of pollution; and if the danger was sufficiently apparent to be noticed by the teacher, it is not to be presumed that it was imaginary. As the sources of pollution are often hidden, it is not unreasonable to suppose that many other wells are in as much danger as those surrounded by nuisances visible to the teacher. Evidently no attempt is made in many instances to furnish a good supply of water for the pupils. They are allowed to quench their thirst wherever they can find water, whether from a source free from contamination or badly polluted. In schools not supplied with water the pupils usually go to the nearest point where it can be obtained, and this is not infrequently at a farmhouse well, which must from its very location be polluted. Indeed, pupils have been known to drink water from a polluted stable well, because the owner of the premises objected to the annoyance incident to their obtaining it from the family well.

Table No. 9 shows a condition at many of our schoolhouses which is disgraceful to civilization, disgusting to good breeding, and dangerous to the health and morals of the pupils. Eighty-two schoolhouses have no privy or water-closet, 559 have only one, while 627 have privies or water-closets common to both sexes. Such a state of affairs would not be allowed to exist in any community that was watchful over the interests of the children.

TABLE No. X.

SHOWING OTHER FACTS RELATING TO SCHOOLHOUSES AND PUPILS.

	Rockingham.	Strafford.	Belknap.	Carroll.	Merrimack.	Hillsborough.	Cheshire.	Sullivan.	Grafton.	Coös.	Totals.
Number of schoolhouses with cellars	39	36	12	2	15	53	29	11	10	6	213
Number on low and undrained land	34	16	10	12	29	19	14	5	21	9	169
Number of schools in which vaccination is not enforced	92	62	80	72	166	126	120	92	106	64	980
Number built since 1875 with doors hung to swing inward	11	3	5	9	24	15	21	4	7	11	110
Number of near-sighted pupils	66	91	27	26	56	136	70	58	49	21	600
Number of schools studying physiology and hygiene	89	38	29	38	81	82	49	42	29	20	497
Number of pupils studying physiology and hygiene	450	515	242	140	445	724	450	143	149	138	3396

Out of 1,204 privies reported upon, only 633, fifty-two per cent, are classed as "good"; 379, thirty-one per cent, are classed as "bad," and 192 as "fair." Two hundred and seventy-four are connected with the schoolhouse, 78 are within 5 feet, 154 between 5 and 10 feet, 319 between 10 and 20 feet, 207 between 20 and 40 feet, and 73 over 40 feet from the schoolhouse.

In many reports the teachers made special remarks upon the condition of the privy, and in some instances they were stated to be in a horrible condition, having been neglected for months and years; and this is true even with many of those connected with the schoolhouse. One hundred and eighteen other nuisances were also mentioned.

In one or two instances the schoolhouse served as one side of a hog-pen, and other conditions equally as bad are reported. From these reports it is evident that in more than one third of our schoolhouses there is no sanitary supervision whatever.

CELLARS.

Six hundred and thirteen schoolhouses are reported to have cellars; a majority of these cellars are not used, and many of them are damp and unventilated. Some of them are used for wood-sheds. The reports do not indicate that they receive any special care, and it is to be inferred from frequent remarks made by the teacher that they are in many instances a constant nuisance. In a few cases water stands in them.

SITE.

One hundred and sixty-nine schoolhouses stand on low and undrained land, while the remainder are reported to be upon healthful, well-drained localities. Not a few teachers, however, report that water stands under or around the building after a rain. A damp site is a constant source of danger, as has been frequently demonstrated by experience. The impairment of health which follows a residence upon damp ground, although slow and almost imperceptible in its progress, is of an exceedingly dangerous character, since thereby organic diseases are frequently developed, especially consumption. The vitality of the pupil is greatly weakened and a condition established which has very little power to resist disease. Of the 169 schoolhouses on low and undrained land, 129 are not ventilated; 33 have wells, 50 rely upon neighbors' wells, 32 have springs, 9 obtain water from a brook, 3 from a "pump," 7 patronize the public water supply, 1 gets water from a pond, 5 do not state the source, and 29 have no supply whatever.

In connection with these same houses, the reports say that the condition of the privies belonging to 54 is "good," 30 are classed as "fair," 2 condition not stated, 70 "bad," and 13 have none.

VACCINATION.

Notwithstanding the law prohibits unvaccinated children attending public school, the teachers of 980 schools report that no attention is paid to the law.* There must, therefore, be many thousand unvaccinated pupils daily attending our schools. This, like the neglect of many laws, is due probably to the indifference of school officers in enforcing the laws, and not from any serious opposition to it. During the recent epidemic of small-pox in Montreal vaccination was ordered among the children in many of our schools, and successfully carried out. The public believe in the efficacy of vaccination, and in order that the number of persons susceptible to small-pox may be kept at the minimum, the law should be enforced.

DOORS.

In 1875 the Legislature passed a law requiring schoolhouse doors to be swung outward.† Notwithstanding this, 110 schoolhouses out of 140 that have been constructed since 1875 have doors swinging inward, in direct violation of the law. The object of this law was to provide means of escape in case of a panic from fire or other cause.

NEAR-SIGHTED PUPILS.

Six hundred near-sighted pupils are reported. A large majority of the cases of near-sightedness are contracted in the school-room. Statistics gathered in this and other countries prove this fact. Prof. Cohn, in the examination of 10,060 school children in Germany, found the percentages of near-sighted pupils as follows: In suburban schools where the light was better than in town schools, 1.4; in city schools, elementary, 6.7; in upper girls' schools, 7.7; in middle schools, 10.3; in high schools, 19.7.

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* "No child, unless he has been duly vaccinated or has had the small-pox, is entitled to attend any public school; and the prudential committees of the several districts, and those who exercise the powers of such committees, shall not allow any such child to be admitted to or connected with any such school." — General Laws, chap. 91.

† "The outer doors, and doors of all passages leading outwards, of all churches, schoolhouses, public halls, and buildings to be used for public purposes, except depots, hereafter constructed, shall open outwards." — General Laws, chap. 106.

These figures show that the condition is acquired and increases with the advancing period of school life. The most prolific cause of near-sightedness among school children is undoubtedly from the amount of light and the manner in which it is admitted to the rooms. There are other factors, however, like glossy blackboards, too small type, the position in which the book is held, etc., etc., which contribute to the same result.

The defects which exist in our schoolhouses, as shown by the sanitary survey, may be summarized as follows:

1. There are too many seats in a majority of the school-rooms.
2. Too small an amount of air-space per pupil.
3. Lack of ventilation.
4. Insufficient amount of light.
5. Improper location of windows.
6. Deficiency in blinds, curtains, and shades.
7. Water supply entirely wanting.
8. Water supply of questionable purity.
9. Privies or water-closets not provided for the schools.
10. Privies or water-closets not separate for the sexes.
11. Privies or water-closets so neglected as to be dangerous to the health of the pupils.
12. Privies or water-closets so located as to constitute a nuisance.
13. Other nuisances in vicinity of schoolhouse.
14. Cellars in an unsanitary condition.

15. Buildings situated on low and undrained sites.

16. Doors hung to swing inward, in violation of the law.

In addition to the above, other conditions detrimental to the health and comfort of the pupil are shown in the survey. Some teachers condemn in strong terms the construction of the desks, and the manner of heating the rooms. Most of the rooms are heated by stoves; some are overheated, while others are insufficiently heated.

The object of this paper is to call attention to the more important defects which exist in our school-rooms, in as brief a manner as possible. These facts having been presented, it is the duty of some authority to take such action as will not only remedy the defects, but provide for the construction of schoolhouses in the future upon hygienic principles. It is a matter of great importance, and the Legislature of New Hampshire should thoroughly consider the subject and enact such laws as will secure more healthful conditions in our school-rooms. There are two ways in which this may be brought about: First, by providing that before any schoolhouse is constructed, a plan of the proposed building shall be submitted to and approved by some competent department, board, or commission, or that said department, board, or commission shall furnish a suitable plan for the given district free of expense, upon application; second, the Legislature might authorize the compilation of a manual of schoolhouse architecture and hygiene, a copy to be furnished to each board of education in the State.

The first proposition would make it obligatory upon school authorities to construct all schoolhouses upon hygienic principles; the second would simply instruct boards of education or building committees in the most approved systems of schoolhouse architecture, but would not insure the following of its teachings. A combination of the two plans would undoubtedly secure the best immediate results, besides doing much to educate those having charge of our schools in the construction and sanitation of schoolhouses. The subject should receive the careful consideration of every one interested in our public school system.

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SIXTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

OF THE

STATE OF NEW HAMPSHIRE

FOR THE FISCAL YEAR ENDING

APRIL 30, 1887.

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

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REPORT.

To His Excellency the Governor and the Honorable Council:

The State Board of Health herewith presents its sixth annual report, for the fiscal year ending April 30, 1887. Like the preceding reports, it has been written for the education of the people of the State upon sanitary topics, and to present in a general way the work of the Board. In respect to the progress made in educating the people upon subjects closely connected with the health of the State, community, family, and individual, we can confidently say that no State in the Union has made more rapid advancement in the same number of years. No state board ever received a more cordial endorsement, or has had its teachings more readily accepted by the people, than the State Board of Health of New Hampshire; and the reason seems to lie in the fact that the Board has given but little attention to original scientific investigation, but has devoted its energies to the amelioration of existing evils that were painfully apparent.

It is true that original investigation of a scientific character is sometimes necessary to determine the cause of certain conditions affecting, or which appear to jeopardize, the public health; such work legitimately belongs to the province of a health department, but without a special appropriation for this kind of work it cannot be carried out, except to a very limited extent. It has, however, needed no inordinate display of scientific formulas to point out to communities, ignorant of such relations, the close association of obviously unsanitary surroundings with disease. Neither does it require any special scientific investigation to organize a local board that, if endowed with a general knowledge of the requirements of health officers, good judgment and executive ability, shall be a power for good in every town. Having from the organization of the Board in 1881 believed that a broad and liberal education of the public mind upon sanitation in general would accomplish more good than any other method, this course has been persistently followed, and our most sanguine expectations have been fulfilled. No educational advancement has been more marked in this State than that of sanitary science. The most noticeable indications of this are the abandoning of polluted wells for water supply in large villages, and the introduction of wholesome water in abundance; the sewering of towns that formerly had no system of drainage; the demand for local boards of health that shall do something more than receive an impecunious salary; the construction of public buildings upon a better sanitary basis; the inauguration of hygienic instruction in our common schools; a better knowledge of the prevention of zymotic (filth) diseases; a more rational view of the avoidance of contagious diseases among children; a higher appreciation of the value of domestic sanitation, and other things that might be enumerated.

The medical profession must be commended to an unlimited extent for the unselfish interest which many of its members have exhibited in working so faithfully for the public interests in seconding the work of the Board and teaching its precepts.

During the year embraced in this report there has been no serious epidemic, excepting that in a few places diphtheria and typhoid fever have existed locally to an extent that might, perhaps, be called endemic. These instances will be reported in another place.

GENERAL SANITARY ADVANCEMENT.

The progress in the prevention of disease which has been made within a very short time, and the means and methods of restricting and controlling epidemics, are very marked. So strongly have the principles of sanitary science fixed themselves upon the public mind, since it has been shown that the ordinary customs and practices of civilized life are often the cause of disease, sometimes epidemics, that sanitary legislation is now given a prominent place upon the statutes of nearly every State, Territory, and province in this country. Thirty-three or thirty-four States now have state boards of health. Vermont has created such a board since our last report was published, so that all the New England States now have state boards of health. Conferences of the state and provincial boards have been held during the year, and important interstate and international regulations regarding notification in contagious and infectious diseases adopted,* methods of action in certain cases agreed upon, and relations established upon a basis of greatest common service in case of the appearance of epidemic, contagious, or infectious diseases.

The fear of cholera two years ago undoubtedly did much for the sanitary interests of the country by arousing the energies of health authorities. This activity has been compelled by the fact that individual States have to look to their own strength alone, because of the inexcusable neglect of the general government to provide for an efficient national health department, instead of placing such vast interests in the hands of a bureau of the treasury department, which is regarded as thoroughly incompetent to perform the duties of a health department.

So conclusively have the claims of sanitary science been proven that its recognition is nearly universal. It has become a branch of education in our schools and colleges, and chairs have already been created in most of the medical schools. To the credit of our own State, Dartmouth Medical College has established a chair of public hygiene, and the first course of lectures was delivered by the president of this Board during the past year.

The investigations that have been in progress during the past few years have revolutionized the old theories of disease, and shown the wonderful preventive possibilities that lie in sanitary precautions and reforms. The very germs or seeds of disease in several specific maladies are to-day known and thoroughly understood. The development of these germs is as simple and as well determined as the growth of vegetables in a garden.

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* See such regulations in the report of the delegate to the meeting of the American Public Health Association.

With this light has come a corresponding knowledge of how to avoid disease. The medical profession recognize this, and are applying the knowledge not only to the treatment of disease, but to its prevention.

In a recent opening address at the University of Berlin, Prof. Robert Koch, the most noted living medical scientist, said: "Hitherto, gentlemen, you have been taught how to endeavor to cure disease; henceforth you will be taught how to succeed in preventing disease." This does not mean that disease will be at once removed from the confines of civilization, or that epidemics will henceforth be unknown; but it does mean that thousands of lives will be annually saved through the knowledge and practice of sanitary laws, and that an epidemic does not necessarily follow the introduction of contagion into a community, however virulent the disease may be. The results of health legislation and its efficient administration have already lowered the death-rate in a large degree, and it is only necessary to have the work actively continued to show each year an increased saving of human life, which is now sacrificed through a violation of the simplest of natural laws.

LOCAL BOARDS OF HEALTH.

More efficient work has been done by local boards of health during the past year than ever before, and these boards have been better sustained in their labors, owing no doubt to the increased knowledge of the value of sanitary work. In some localities the people have demanded active work of the local board; in others the local boards themselves have taken an advanced stand and done much for the benefit of those within their jurisdiction.

In Manchester the board of health has done a very large amount of work since its organization under a special act of the Legislature of 1885, and has greatly improved the sanitary condition of the city. It has established important rules and regulations for the sanitary government of the city, and has caused the same to be impartially enforced. It has driven the hogs out of the more compact part, established rules governing the disposal of garbage and sewage, and has made and is enforcing strict regulations governing contagious and infectious diseases.

The work accomplished by local boards even in the smaller towns of the State is sufficient to warrant the assertion that every town in the State should have a local board of health. Under the present law, the selectmen have the authority to appoint a local board of health, if none were elected at the annual town-meeting; and, upon petition of ten legal voters, they are obliged to appoint such a board. We would recommend the election or appointment of a local board in every town, and thus relieve the selectmen of the duties belonging to health officers. There are cases sometimes in which it is incompatible for men to act as selectmen and health officers. It has been urged that it is cheaper in small towns for the selectmen to act in both capacities; but this argument has no foundation, as both boards are paid for the services actually rendered, and the *per diem* charge of each would be the same. Again, a board of selectmen are not chosen with reference to their qualifications as health officers. A board of health should be selected for their special fitness for and knowledge of sanitary work, and at least one member should be a physician.

SANITARY CONVENTIONS.

The Board held its first sanitary convention in the city of Manchester in December last. The session continued through two days and two evenings, and was successful in all particulars. Papers upon several subjects pertaining to the public health were read and ably discussed; they will be found in this report in full or abridged. The newspapers of the city gave very full and complete reports of the meetings, thereby assisting in giving publicity to the wholesome truths that were brought out both in the papers and the discussions. The more extended the knowledge of sanitation, the greater will be the results for good. Public meetings in which these questions can be discussed must be productive of some good, in whatever community they are held. The value of sanitary conventions has been demonstrated in the States of Michigan, New Jersey, Ohio, Kansas, and elsewhere. They bring home to the minds of the people in the communities where held facts and information that many would not acquire in any other way; besides, some topics of special local interest are usually considered, which makes the sessions doubly interesting and instructive. If the defects in the schoolhouses of the locality are to be considered, parents whose children invariably return from school with flushed faces and headaches will attend; if polluted wells are to be discussed, the man who has a suspicion that his cesspool, privy, or stable is slowly poisoning his water supply will be present, and many others who can see in such a meeting the possible means of furthering their interests, enlightening their minds, or being pleasantly and profitably entertained.

The Board received so much encouragement in its first sanitary convention that it is proposed to hold others — possibly several — in different parts of the State during the coming fall and winter.

NUISANCES BROUGHT TO THE ATTENTION OF THE BOARD.

During the year many complaints against nuisances of one kind and another have been presented to the Board. In no instance has a complaint been ignored, excepting one or two which came anonymously through the mail. Some of the complaints came directly from individuals who had not even mentioned the case to their local board of health; these were transmitted to such boards with requests to investigate, accompanied with such other advice as seemed necessary. Other cases have been submitted to this Board for advice, instructions, etc. In a few instances a direct order has been issued to a local board to abate a certain nuisance. This has been done only in the case of an aggravated nuisance and immediate action was necessary, or when the facts were first and best known by this Board, and the step warranted by existing circumstances.

All complaints of whatever nature against actual or alleged nuisances should be made first to the local board of health, or health officer, except, perhaps, in cases relating to public grounds, institutions, etc., where the jurisdiction of the local board is not clearly defined or understood.

Local health authorities will at all times receive, upon application, any advice, instruction, or aid which is within the power of this Board to render.

ANONYMOUS COMPLAINTS

will receive no attention from the Board. This announcement is made because we have occasionally received such a complaint. The person who has not a sufficient amount of moral stamina to state facts without hiding his identity under a *nom de plume* will have to endure his grievance, so far as we are concerned, till he comes out from his cowardly hiding-place and reveals himself in a frank and manly way. The man who has an actual cause for complaint will secure its removal quicker, easier, and with less trouble to himself and his neighbors by a straightforward, open course that is above the taint of crookedness, cowardice, or any suspicion whatever.

CHARITABLE AND PENAL INSTITUTIONS.

Systematic reports upon the penal and charitable institutions of the State, with few exceptions, have been made in former reports of the Board, hence it does not seem necessary to go over the same ground again, as but few changes of note have been made during the year. A few institutions of this class have not been inspected since the last report was issued, but a general knowledge of such has been had from reliable sources. Improvements of more or less importance have been made in all the county almshouses since the Board commenced its system of inspections. It is not claimed that all these changes have been brought about through the efforts of this Board, but it is true that not a few of them have been. Our almshouses are, as a rule, in excellent condition. Most of them now avail themselves of the advice and experience of the Board in the construction of new buildings and the remodeling of old ones, as well as in other matters relating to the welfare and comfort of the inmates. All the counties in the State now furnish good homes for their needy and unfortunate poor, while the penal institutions, with the exception of one or two jails, are in good condition and ample for the purposes for which they were constructed.

POLLUTED DRINKING WATER.

Very much has been accomplished by the Board in its efforts to secure for the people a better quality of water for drinking purposes. The serious evils that have so frequently resulted from the use of bad water taken from wells receiving the drainage from buildings have been shown in the previous reports of the Board, and the evidence accumulates from year to year. During the past year water from many wells, embracing nearly all sections of the State, has been examined, and in a majority of cases found to be badly, in some cases horribly, polluted.

The work of the year not only corroborates the experience of the past, but adds additional evidence to the already thoroughly established facts. The ordinary shallow wells, such as exist in our small villages throughout the State, and at many individual homes outside the villages, are a source of danger to health and life,—a fact slightly or not at all understood by a majority of the people. Very much information upon this subject has been given to the public through the reports of this Board, but the dissemination of such knowledge ought to be made much more general. However, the agitation of the subject has already been sufficiently widespread to bring about many changes, corporate and individual. Public water supplies from sources of undoubted wholesomeness have been constructed in several of our larger towns, and more are contemplated. Delay has been occasioned in some instances because there is no general law under which towns or other corporations can secure the right of way to lay water-pipes where parties decline to grant it. Among the towns which have introduced public water supplies within a comparatively short time are:

Bristol. — Water from New Found Lake, three miles north, has been brought into the village during the past year; twenty or more families are supplied from it.

Colebrook. — Aqueduct water is supplied to fifty or more families from several springs high up on the mountain.

Conway. — Conway Centre village is being supplied with water from a spring, due to the personal efforts of one of its citizens. Only a few families have as yet received the water, as it was late in the fall before operations were commenced.

Epsom. — Families in Gossville supplied with spring water, but it is conducted through lead pipe.

Exeter. — The town has been supplied with water during the past year, but it has not come into use yet.

Franklin Falls. — Water is brought from a bluff south of Franklin Falls village; laid down late, but supplies some thirty families at present and abundant for many more.

Haverhill. — We have a supply of spring water, which, in my judgment, has much to do with keeping our list of fever and kindred diseases so small.

Henniker. — About thirty-five families are supplied by Henniker Spring-Water Company; constructed in 1884.

Hillsborough Bridge. — The work of supplying the town with water has been commenced, but only the main pipe is down. The water is to be brought from Loon Pond, four miles away. The whole village, two or three hundred families, will probably be supplied in the spring.

Keene. — We have increased our water supply by bringing water from Echo Lake in Roxbury, which is of better quality.

Laconia. — Lake Village and Laconia Water-works supply two hundred families.

Lake Village. — The Laconia and Lake Village Water-works Company have put in a system of water supply, taking the water from Lake Winnipesaukee above both villages, greatly benefiting both with pure water and better fire protection.

Lisbon. — Water supply from Pearl Pond; there are probably forty or forty-five families supplied with it at present.

Rochester. — Water has been brought in from a pond, but only a few families have taken it as yet.

Somersworth. — On the top of Prospect Hill in this village is a reservoir perhaps 100 feet in diameter and 10 or 12 feet deep, supplied with water by rain falling directly into it and by water forced into it from the river which drives the cotton mills, etc. Now water has been brought from this reservoir, in iron pipes, to several families during the past year, which, added to the previous number, would make some thirty in all; the water to be used for all purposes. Cannot say what number resorted to this from suspicion that their wells were contaminated. Know some have, but most persons owning houses are not over-anxious to proclaim or admit anything which will depreciate the same.

North Stratford. — We have a good water supply complete, which supplies the three hotels and nearly all the families in North Stratford village.

Sunapee. — Water has been brought from Sunapee Lake in tar-lined iron pipe. About fifteen families will be supplied.

Woodsville. — There has been an entire new system of water supply introduced into the village, it being pumped from the river, and there is now an abundant supply of pure water. Typhoid fever and for the most part all diarrhœal diseases are already exterminated.

Bennington. — Water has been brought into the village this year from a spring of excellent water.

These are great public improvements from a sanitary standpoint, and in some of these towns the zymotic diseases have been greatly reduced as a result. In individual instances disease-producing wells have been abandoned, and a good supply of water brought to the home from some spring or other unpolluted source. These changes have already added greatly to the health, comfort, prosperity, and happiness of the people.

The germ theory of disease, which has been demonstrated beyond a doubt, has thrown much light upon the subject of water pollution, and made plain problems which were before inexplicable. It has been proven that the germs of certain diseases may be readily transmitted for a considerable distance through porous soil, and in that way introduced into a well or other water supply. The epidemic of typhoid fever at Lausen, Switzerland, was produced by germs that were carried for a mile through the soil and in underground channels. The remarkable epidemic of the same disease which occurred at Plymouth, Pa., a little more than a year ago, conclusively proves to what an alarming extent the germs of the disease from a single patient may be distributed, with most appalling results. In this epidemic over 1,100 cases with 114 deaths resulted from the typhoid germs in a single case, which were transmitted to the people through drinking water, and this after they had been carried for a considerable distance down a stream and through two reservoirs before being pumped into the service-pipes and distributed. If the poisonous principle can be transmitted under such circumstances, it is no wonder that wells located in the immediate vicinity of filth-receptacles are frequently polluted. This fact should be borne in mind in considering the subject of river pollution. It is a well-known fact that ordinary sewage is soon changed in character in running streams and becomes inert matter, but it is not probable that the living germs of disease are so readily destroyed ; hence it seems possible that they may be conveyed far beyond the point at which the sewage, with which they were originally mingled, can be determined by the most accurate analysis. It follows then that a chemical analysis of water does not always reveal its true character. Sewage and other organic matters may be absent, and the water pronounced excellent from a chemical standpoint, and yet it may be impregnated with the germs of disease.

Chemical analysis, then, has only a negative significance : it tells us that certain waters are unfit for drinking purposes, but cannot guarantee that other waters, although lacking those organic impurities which such analyses recognize, are pure in other respects. The only protection lies in placing such safeguards around our water supplies as will insure protection against any and all kinds of pollution. It is the duty of towns and other corporations controlling public water supplies to protect them scrupulously, so that the consumer may be insured against disease from this source. The water-shed of all ponds used for public water supplies should be well guarded ; they should not be made public grounds for picnics and pleasure parties, neither should the pond be used for a bathing-place in summer, nor a race-course in winter. It should be put to no use whatever except for the supply of drinking water. The last Legislature recognized the importance of protecting sources of water supply by enacting a law (Chapter 90) of which the following is an extract : "If any person shall place, leave, or cause to be placed or left, any substance or fluid in or near to any lake, pond, or stream tributary thereto, from which the water supply in whole or in part of any city, town, or village is taken for domestic purposes, that may cause the water thereof to become impure or unfit for the uses for which it is intended, such person shall be punished by fine not exceeding twenty dollars or by imprisonment not exceeding thirty days, or both."

In reference to polluted drinking water in New Hampshire, particular attention is called to a paper on the subject, found elsewhere in this report, by Prof. E. R. Angell, who has made many analyses of well-waters for this Board.

GLANDERS.

A few cases of glanders have existed in the State during the year, supposed in most cases to have been imported from Boston. This supposition is based upon the fact that stables of glandered horses were discovered in that city a little more than a year ago, and the evidence is pretty strong that horses suffering with the disease were smuggled into other States and sold. The trading of glandered horses is carried on by unscrupulous dealers, who dispose of them in the country among unsuspecting purchasers or to unprincipled jockeys. Numerous cases of this kind have been discovered by the president of the Society for the Prevention of Cruelty to Animals, some of them being destroyed upon discovery. In one instance two horses were ordered to be quarantined until they could be examined by a representative of the Board, but they were taken to a town in Massachusetts, for the purpose, undoubtedly, of evading the law in this State; they were not successful, however, as the Massachusetts authorities were notified of their action, and they caused the animals to be destroyed immediately.

Complaints were made that glandered horses existed in the towns of Bath, Littleton, Whitefield, and Jefferson, but upon examination by the Board they were found to be suffering from simple catarrh, except in one instance at Bath. In this case the horse was sold and taken to Vermont before it could be examined, but the history of the case left no doubt that it was a genuine case of glanders.

Since this disease is communicable to man and is invariably fatal, every case found among animals should be immediately destroyed, and all other necessary precautions taken to limit its spread. The disease may also be communicated to sheep, goats, dogs, cats, and even mice and rabbits; cattle, pigs, and fowl resist its infection. It is thought by some authorities that the disease is more frequently communicated to man than is generally supposed, and that the cases have been recorded as blood poisoning from some unknown cause.

The last report of the state board of health of Minnesota says, in discussing the subject: "The horror of the death of a man by glanders, caught from a horse he was treating for 'distemper,' must be a lesson to our local boards not to hesitate to deal with all doubtful cases by strict seclusion till sure of the disease, and then to kill promptly and disinfect thoroughly."

The state veterinarian of Illinois asserts that the disease is largely upon the increase, and that it is not infrequently communicated to men who have the care of horses afflicted with this malady. Since health authorities in the various States have investigated the disease, its extent has been found to be much greater than was generally supposed. The medical journals not infrequently chronicle deaths from it. Local boards of health should regard it as one of the infectious and contagious diseases that come within their province to take cognizance of, and should act promptly in isolating the diseased animals. Health authorities should be notified of suspected cases wherever found.

Glanders is a contagious and infectious disease, transmitted by direct contact, by means of infected articles or things, and possibly conveyed in the air of the stable. It is always incurable. The most prominent symptoms are local: They are a discharge from and thickening and ulceration of the lining membrane of the nose and the enlargement of the glands under the lower jaw, known as the submaxillary, and may be confined to one or both sides. Either or both nostrils may be affected. The discharge is glutinous at first, adhering to the skin and hair around the nostrils, forming soft crusts of a deep brown color. As the disease advances the discharge becomes purulent and of a slightly greenish tint, which is generally regarded as a very characteristic symptom. The ulcers in the nostrils are of two kinds: One with a raised and hardened base, the other simply a destruction of the lining membrane of the nose in patches. In chronic cases the ulcers are generally few and frequently confined to one nostril. At first there are little lumps about the size of a pea in the membrane, and well defined. When touched by the finger they feel like a shot or some other foreign body fixed on the membrane. Their color is of a yellowish shade with a border of inflamed tissue around them. They soften slowly and in two or three days open, discharging a slight amount of matter, and leaving a depression on a hardened base, which shows no disposition to heal, but greatly enlarges. Another characteristic symptom is the enlargement of the glands under the jaw. In size they vary from a chestnut to that of a small apple; they feel irregular to the touch, lumpy and nodulated. They soon harden and become fixed to the other tissues of the jaw by a fibrous pedicel. In this condition they remain indefinitely. There are also characteristic constitutional symptoms, such as fever, debility, loss of appetite, weight, etc. The variety that attacks the lung is much more difficult to diagnose, and is therefore more dangerous. If the disease appears in an acute form, a very few days of observation will settle the matter; if in the chronic state, the presence of the discharge, indurated ulcers, and enlarged glands under the jaw are certain evidences.

The following is the law regarding the exposure of glandered horses in public places (Chapter 30, Pamphlet Laws 1879):

"SECTION 1. Any person who shall expose or suffer to be exposed, in any highway, public place, or pasture, any horse affected by the disease known as glanders, shall be liable to the penalty of a fine not exceeding fifty dollars for each offence, for the benefit of the town or city where such offence is committed.

"SECT. 2. Any person exposing any domestic animal as aforesaid, affected with any contagious or troublesome disease, shall be liable to a fine not exceeding twenty-five dollars for each offence, for the benefit of the town.

"SECT. 3. The marshals of cities, the selectmen or police officers of towns, where such offences are committed, on proper and satisfactory evidence, shall cause the parties so offending to be prosecuted."

TYPHOID FEVER AND DIPHTHERIA.

Below may be found the substance of reports received from two hundred and eight physicians in the State, upon typhoid fever and diphtheria for the year 1886. This record would be of much more value if all the physicians in the State would render an annual report, but as there are in the vicinity of six hundred of them practicing in the State, it will be seen that only a little over one third of them report. These reports, however, cover more than one third of the territorial area of the State, for the reason that a single physician often reports cases in two or more towns. On the other hand, the record, in many instances, does not show all the cases that occurred in a town from which the record was received, because the reporting physician gave only those cases that occurred in his practice. In two or three instances the name of the physician did not accompany the report.

These reports, like those given in former volumes of the State Board of Health, contribute additional evidence to the already well-established fact that both these diseases are dependent upon bad sanitary conditions.

Acworth—CARL A. ALLEN, M. D.

Typhoid Fever. — None in my practice.

Diphtheria. — None. This has been a very healthy season and but few acute cases of any kind.

Amherst — HERBERT D. HICKS, M. D.

Typhoid Fever. — None in my practice.

Diphtheria. — None. Our town is in a fair sanitary condition, and I have not seen a case of diphtheria for three years.

Amherst — J. B. PETTENGILL, M. D.

Typhoid Fever. — Four cases, all recovered. There have been five cases in town, one fatal. In three cases the drinking-water was contaminated.

Diphtheria. — None. Consider filth the most common cause of the disease.

Andover — Henry A. Weymouth, M. D.

Typhoid Fever. — Seven cases, one fatal; all in town. The first case came from out of town, and the others followed.

Antrim — Morris Christie, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None. Think this disease is usually due to contagion.

Antrim — I. G. Anthoine, M. D.

Typhoid Fever. — Four cases, none fatal. In all cases the drinking-water was contaminated. This with unhealthy surroundings is generally the source of the disease.

Diphtheria. — One case, fatal. Could not discover the cause. Believe it to be due generally to unhealthy surroundings.

Ashland — M. C. Spaulding, M. D.

Typhoid Fever. — One case, now under treatment, was brought from Tilton. Attribute the cause of the disease to decaying animal and vegetable matter.

Diphtheria.—One case in Centre Harbor, not fatal. A defective sanitary condition is the most common source of the disease.

Barrington — William Waterhouse, M. D.

Typhoid Fever. — One case, fatal.

Diphtheria. — None.

Bath (*Swiftwater*) — Dr. J. Bronson.

Typhoid Fever. — None observed. Only one case in town. Believe the disease is usually caused by filth in and around the buildings.

Diphtheria. — None; none in town. In my opinion the filth that collects around the premises where such cases occur, and water polluted by the same, are the most common sources of the disease.

Bedford — FRANK H. ROWE, M. D.

Typhoid Fever. — One case, fatal. Two cases in town, one fatal. The case that I lost was caused by contaminated drinking-water.

Diphtheria. — I have seen none.

Belmont — S. A. MERRILL, M. D.

Typhoid Fever. — Two cases, both fatal. Both these cases, which were malignant in character, occurred in strumose subjects, whose powers of resistance were below normal. Think the disease is probably due to a specific germ. In neither case was the drinking-water contaminated.

Diphtheria. — None observed.

Boscawen — E. E. GRAVES, M. D.

Typhoid Fever. — Eight cases, all in town, none fatal. Was not able to trace the cause in any case.

Diphtheria. — Twelve cases, none fatal, all in Boscawen and Penacook. Three or four cases were thought to have been caused by bad sanitary conditions; two or three others by contagion.

Bradford — J. B. RAYNES, M. D.

Typhoid Fever. — None.

Diphtheria. — Not any well-marked cases; quite a number of diphtheritic sore throats. All recovered.

Bristol — J. M. BISHOP, M. D.

Typhoid Fever. — One case, recovered. I attribute the cause of the disease, in a great degree, to contaminated water and vegetable decomposition.

Diphtheria. — One case, not fatal. Tonsilitis has been more frequent. In perhaps one case the drinking-water was contaminated. Consider atmospheric changes and filth to be the most common sources of the disease.

Bristol — JOHN C. WHEET, M. D.

Typhoid Fever. — One case, recovered. This case was caused by drinking water from an old well that had not been used for five or six years, and had not been cleaned out.

Diphtheria. — Nine cases, none fatal; three of the cases were in Alexandria and three in Orange. In the cases in Alexandria, the sink-drain became stopped and a cesspool was formed near the upper side of the house and where it could easily soak through into the cellar.

Campton — JOHN D. LANCE, M. D.

Typhoid Fever. — Two cases, neither fatal. Could discover no cause.

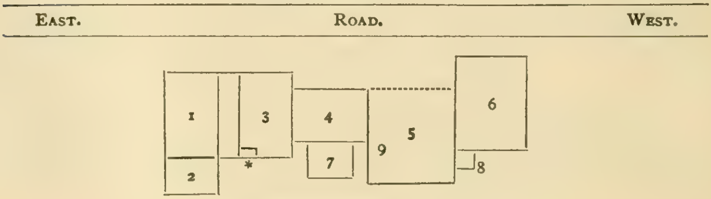
Diphtheria. — None.

Campton Village — A. D. MUCHMORE, M. D.

Typhoid Fever. — Four cases, none fatal, all in Thornton.

Three of the cases occurred in one house, of which the following is a plan:

DIAGRAM NO. I.



* Slops thrown out.

1 & 2 — Sick-rooms. 3 — Kitchen. 4 — Shed. 5 — Barnyard. 6 — Barn. 7 — Well-house and well. 8 — Privy. 9 — Sag in barnyard.

The land back of the house is a pasture, descending toward the house and well. The ground descends from the barn and privy two thirds of the way to the well, where there is a sag or depression, and at this point, which is some fifteen or twenty feet from the well, the water stands in wet weather. The soil is sandy. The well was dug down to a ledge, and the soil around the top banked up two feet above the barnyard; but as the land naturally inclines toward the well, the surface water from barnyard and privy must find its way into it. The house is old and in a dilapidated condition, unfit for any one to live in.

Diphtheria. — One case, recovered, in Thornton. Think bad ventilation in cellars and privies is the most common source of the disease.

Canaan — E. M. TUCKER, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None.

Canaan — GEORGE E. LEET, M. D.

Typhoid Fever. — None.

Diphtheria. — None.

Candia — L. E. GRANT, M. D.

Typhoid Fever. — Four cases, none fatal; one case in town. Attribute the disease to a specific germ propagated in filth. In three cases the drinking-water was polluted.

Diphtheria. — None observed.

Charlestown — JAMES M. WHITTAKER, M. D.

Typhoid Fever. — Two cases, both fatal. Attribute the cause of the disease to a generally depressed physical vitality.

Diphtheria. — None observed.

Chesterfield — JOHN F. BUTLER, M. D.

Typhoid Fever. — None observed.

Diphtheria. — Many cases of sore throat, possessing possibly a diphtheritic nature to a slight degree, but no well-marked case. Believe diphtheria to be infectious and epidemic. Have seen no well-marked instance of contagion in a practice covering about 500 cases of diphtheria.

Chesterfield — W. G. CAIN, M. D.

Typhoid Fever.— None observed.

Diphtheria.— Five cases, none fatal. Think polluted water may have been the cause in two cases; could not assign a cause for the others.

Claremont — C. W. Tolles, M. D.

Typhoid Fever. — Five cases, none fatal. In all cases the drinking-water was polluted.

Diphtheria. — Twenty cases, none fatal. There have been reported to me, as secretary of the Board of Health, forty-eight cases, one fatal.

Claremont — A. R. Cummings, M. D.

Typhoid Fever. — Seven cases, all recovered. Two cases were caused by a badly constructed sink-drain, but the water was not contaminated thereby. Five cases were in a French block where the water was contaminated from the vault.

Diphtheria. — Ten cases, all recovered. In my opinion the most common cause of the disease is bacteria.

Colebrook — F. C. Harris, M. D.

Typhoid Fever. — Four cases, two fatal. One fatal case in town; one case each in Columbia, Lemington and Canaan, Vt. Have no doubt that three cases were caused by contagion. There was a good chance for contamination of water in either of the four cases.

Diphtheria. — Five cases, one fatal; one case, fatal, in town; four in Columbia. Think decaying animal and vegetable matter near dwellings is the most common source of the disease.

Concord — G. P. Conn, M. D.

Typhoid Fever. — Four cases, none fatal. Was unable to trace the cause. It is probably a germ disease.

Diphtheria. — Two cases, recovered. The origin of the disease could not be traced to a specific source, yet it is probable that there is a specific germ; but the period of incubation and the conditions necessary for its development are still unknown.

Concord — EDWARD FRENCH, M. D.

Typhoid Fever.— None observed.
Diphtheria.— None.

Concord — GEORGE COOK, M. D.

Typhoid Fever.— Three cases, none fatal.
Diphtheria.— None observed.

Concord — F. A. STILLINGS, M. D.

Typhoid Fever.— Three cases, one fatal, being complicated with disease of left lung. Attribute the disease to a specific typhoid germ. A faulty sewer was a factor in one case.

Diphtheria.— None observed. Think contagion is the most common source of diphtheria.

Concord — H. C. CUMMINGS, M. D.

Typhoid Fever.— Two cases, recovered. Attribute the disease to bad hygienic surroundings and impure water. In one case the drinking-water was polluted.

Diphtheria.— None in my practice.

Concord — D. E. SULLIVAN, M. D.

Typhoid Fever.— No case of true typhoid, though I had several cases in which it was a question as to diagnosis, but results showed simple, continued fever; all recovered. Think the disease is always due to a specific germ.

Diphtheria.— None.

Concord — E. A. CLARK, M. D.

Typhoid Fever.— None in my practice during the year. Attribute the cause of typhoid fever to germs from dejections of typhoid patients, developed in unsanitary conditions and conveyed in polluted drinking-water or air.

Diphtheria.— Six cases, one fatal. Unsanitary conditions undoubtedly favor its occurrence.

Contoocook — J. W. WILSON, M. D.

Typhoid Fever.— One case in Webster. Attribute this case to contaminated water. The well was very low and nearly dry. The pig-sty in the barn, thirty feet from the kitchen, was in a very offensive condition.

Diphtheria.— None observed. There have been numerous sore throats. Diphtheria is commonly caused by unsanitary surroundings, probably.

Contoocook — GEO. C. BLAISDELL, M. D.

Typhoid Fever.— Four cases, none fatal. None of these cases were considered in any way dependent upon impure water, etc.

Diphtheria.— Five cases of a mild form, none fatal. So far as I have been able to judge, unsanitary conditions have only been indirectly connected with the cases. Atmospheric changes I consider a common source of the disease.

Conway — S. N. GREENLAW, M. D.

Typhoid Fever.— Four cases, none fatal. There was no evidence of water pollution. Think contagion is the most common source of the disease.

Diphtheria.— None observed.

Conway — DAVID WATSON, M. D.

Typhoid Fever.— Five cases, mild, none fatal. The drinking-water was polluted in every case.

Diphtheria.— Seven cases, none fatal. The sanitary conditions were very bad. Think filth is a common source of the disease.

Conway — S. A. EVANS, M. D.

Typhoid Fever.— Had four cases of continued fever, which I could hardly call typical typhoid ; none fatal. Two cases I attributed to contaminated well-water; the other two I could not account for.

Diphtheria.—None observed.

North Conway — JOSEPH H. PITMAN, M. D.

Typhoid Fever. — Seven cases, none fatal; five in town, two in Jackson. Attributed three cases to impure drinking-water; the others were of a mild type and the cause obscure.

Diphtheria. — None in town; one case in Bartlett; six in Jackson, five fatal. The origin of the disease is not clear to my mind. I have no doubt that polluted well-water and bad sanitary conditions, if not the cause, are important factors in spreading the disease, for the system, under these conditions, being in a receptive condition, the germs of all zymotic diseases readily find the soil for development.

Derry — I. H. ADAMS, M. D.

Typhoid Fever. — Twenty-three cases, one fatal; twenty-one, with one fatal, in town. Attribute it to impure water.

Diphtheria. — Three mild cases, none fatal. Think filth is the most common source of diphtheria.

Dover — M. C. LATHROP, M. D.

Typhoid Fever. — None, *i. e.*, no typical cases of the disease. Attribute typhoid fever to a specific *contagium vivum*, whose generation is amenable to sanitary limitations.

Diphtheria. — Two cases, neither fatal. Both cases were sporadic; neither had an apparent history of exposure to other cases of the same disease, or to other insalubrious conditions.

Dover — T. J. W. PRAY, M. D.

Typhoid Fever. — Eight cases, none fatal. Attribute it to filth and bad drainage. In three or four cases an unusual attending symptom was neuralgia in different parts of the abdomen. This was persistent, and nothing but opiates in full doses would avail anything.

Diphtheria. — Four cases. These may have been due to decayed vegetable matter in a marsh near by. Consider filth and want of suitable ventilation to be common sources of the disease.

Dover — CARL H. HORSCH, M. D.

Typhoid Fever. — None in my practice.

Diphtheria. — None observed.

Dover — R. G. BLANCHARD, M. D.

Typhoid Fever. — One case, from Lawrence, Mass., recovered. Attribute the disease to a specific poison.

Diphtheria. — Three cases, none fatal. Sanitary conditions not good in two cases.

Dover — JOHN R. HAM, M. D.

Typhoid Fever. — None observed.

Diphtheria. — One case, not fatal. Could discover no cause in this case; think it is usually caused by contagion from a specific germ.

Dover — H. R. PARKER, M. D.

Typhoid Fever. — One case, recovered. The disease was contracted in Massachusetts, and patient came here for treatment; cause to me unknown. Am unable to state what may be the cause of typhoid fever.

Diphtheria. — Two cases, both recovered. Attribute the disease to bad sanitary conditions.

Dover — M. B. SULLIVAN, M. D.

Typhoid Fever. — Two cases, both recovered. Attribute the disease to bad drainage, etc.

Diphtheria. — Two cases, both recovered. Unsanitary conditions were the main cause.

Dover — SMITH AND CHAMBERLAIN, M. DS.

Typhoid Fever. — Two cases, not fatal. This is an acute infectious disease, produced by specific poison originating within the body and developing outside, and is taken up by other organisms; may also arise *de novo*.

Diphtheria. — Five cases. Traced in one instance to a badly constructed vault. The most common source of the disease is diphtheritic poison, usually combined with bad sanitary surroundings.

Effingham — J. M. LEAVITT, M. D.

Typhoid Fever. — None. Think typhoid fever is caused by overwork, impure water, and filth.

Diphtheria. — Not a case.

Effingham — ALBERT N. GOULD, M. D.

This town is and has been for the last twelve years remarkably free from typhoid fever, diphtheria, and scarlet fever, etc., while surrounding towns have suffered to a greater or less extent. I have met with but one case of genuine diphtheria since May, 1875, in this town. We are abundantly supplied with wells and springs of the most pure and sweet water, and this, it may be, contributes to our immunity from so-called filth diseases. I have known the water from one spring to be carried in bottles and kegs to a long distance for the use of persons suffering from kidney affections, they having discovered its soothing qualities while residing or staying in the vicinity.

Enfield — VALENTINE MANAHAN, M. D.

Typhoid Fever. — Five cases, one fatal; two, with the one fatal, in town; three in West Canaan. Think the disease is caused by bad drainage.

Diphtheria. — Seven or eight mild cases. In all cases there was contaminated water and bad drainage.

Enfield Center — F. P. FISHER, M. D.

Typhoid Fever. — None in my practice.

Diphtheria. — One case, recovered.

Epping — H. B. BURNHAM, M. D.

Typhoid Fever. — Six cases, one fatal. The water was contaminated in one case. Do not know what to attribute the disease to.

Diphtheria. — Three cases, none fatal. Do not know the cause.

Epping — A. C. Buswell, M. D.

Typhoid Fever. — None.

Diphtheria. — None.

Epping — F. W. Spaulding, M. D.

Typhoid Fever. — Four cases, none fatal; all in one family living upon the bank of the river, which was very low. There were other cases in the immediate vicinity under similar circumstances. It is probable that the drinking-water was contaminated in all cases.

Diphtheria. — One case, not fatal. Could not trace the cause. Think it is a specific poison.

Epsom — David Lincoln Locke, M. D.

Typhoid Fever. — Two cases, sisters; enteritis in both cases. The water used was from a well near the shoe-shop.

Diphtheria. — None.

Exeter — Wm. G. Perry, M. D.

Typhoid Fever. — None observed. There has been one case in town, fatal.

Diphtheria. — None in my practice. One fatal case reported in town.

Farmington — R. B. Foss, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None.

Farmington — D. T. Parker, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None.

Farmington — H. P. WHEATLEY, M. D.

Typhoid Fever. — Three cases, none fatal; two in town, one in adjacent town. In all cases the water showed the presence of vegetable matter. Consider impure drinking-water the cause.

Diphtheria. — None observed.

Francestown — ARTHUR J. TODD, M. D.

Typhoid Fever. — One case, not fatal. Attribute this case to overwork and improper food.

Diphtheria. — None observed.

Franklin — LUTHER M. KNIGHT, M. D.

Typhoid Fever. — One case, of a mild type. Generally attribute the disease to decomposing animal and vegetable matter.

Diphtheria. — Three cases, all recovered. Bad sanitary surroundings had a marked influence on these cases, and I consider such to be the most common source of the disease.

Franklin Falls — JOHN H. SANBORN, M. D.

Typhoid Fever. — Eight cases, one fatal. Do not know the cause.

Diphtheria. — Ten cases. In most, if not all, cases were influenced by bad sanitary surroundings. Think defective drainage the most common cause of diphtheria.

Franklin Falls — C. W. ADAMS, M. D.

Typhoid Fever. — Four cases, none fatal. The drinking-water was polluted in every case. Consider bad sanitary conditions the most common cause of the disease.

Diphtheria. — Two cases, recovered; one in town, one in Tilton. Bad sanitary conditions were a factor in every case, the severity of the case depending upon the surroundings. Think decomposing animal and vegetable matter is the most common source of the disease.

Freedom — GEO. W. LOUGEE, M. D.

Typhoid Fever. — Three cases, one fatal; two in town, one fatal in Brownfield, Me. Think the disease was caused mainly by stagnant water and filth.

Diphtheria. — Six cases, none fatal; four in town, two in Madison.

Gilsum — I. A. LOVELAND, M. D.

Typhoid Fever. — None in my practice.

Diphtheria. — None.

Gilsum — K. D. WEBSTER, M. D.

Typhoid Fever. — Six cases, none fatal, mild form. It is probable that the drinking-water was polluted in every case. Consider impure water and air the most common sources of typhoid fever.

Diphtheria. — Seven cases, none fatal. Bad sanitary conditions in nearly every case. Think impure atmosphere the most common source of the disease.

Goffstown — FRANK BLAISDELL, M. D.

Typhoid Fever. — None.

Diphtheria. — Have not seen a case this year.

Goffstown Centre — CHARLES F. GEORGE, M. D.

Typhoid Fever. — Three cases, none fatal; one in town, one in Bedford, one in Dunbarton. Could trace the case in Dunbarton directly to the water supply. The well stands but a short distance from sink-drain and privy on one side, and the stable about the same distance on the other. Had a case in the same house last year. Could discover no cause for the case in Bedford. The water was good and the drainage as good or better than at most country houses. Nearly the entire family was prostrated with the fever a few years ago, a suspicious fact for which I could not account. The third case was imported from Suncook; could learn nothing of the sanitary conditions.

Diphtheria. — None.

Goshen — F. P. Jones, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None in my practice this year. Have observed the most common cause of diphtheria to be foul sink-water running on the ground close to dwellings, and sink-drains too near wells.

Grafton — Geo. W. Weymouth, M. D.

Typhoid Fever. — None.

Diphtheria. — None.

Great Falls — Louis L. Auger, M. D.

Typhoid Fever. — Twenty-two cases, three fatal; all in town. Drinking-water contaminated from sink-drain in one case. Attribute the disease to miasmatic air.

Diphtheria. — Eleven cases, one fatal; all in town. Attribute it to miasmatic air.

Great Falls — L. D. Hamblet, M. D.

Typhoid Fever. — Eight or nine cases on one street, caused by neglected sink-drains and vaults. No cases occurred after these matters were corrected. Attribute the disease to faulty drainage, vaults, etc.

Diphtheria. — Twelve cases, three fatal; four in town; eight, with three fatal, in Berwick, Me. The cases in the latter place occurred on a farm where there was a foul vault, and two of the fatal cases were children who had played around the same. Think the most common causes are bad drainage, foul vaults, etc.

Greenland — William O. Junkins, M. D.

Typhoid Fever. — Eleven cases, three fatal; two in town; nine, with the three fatal, in Stratham and N. Hampton. Think the drinking-water contained morbid material or germ in the majority of my cases; six or seven.

Diphtheria. — Eighteen cases, two fatal; three in town; two fatal in Newington and the remaining cases in Newington and Stratham. Was unable to trace the source of the disease. Attribute it to colds and contagion.

Greenville — CURTIS A. WOOD, M. D.

Typhoid Fever. — Twenty-one cases, one fatal; four mild cases in town; seventeen in New Ipswich (five at High Bridge and twelve at Bank Village, two small villages in the town of New Ipswich). Two cases were evidently caused by the sink-drain leaking into the cellar. The only fatal case (and that was rapidly fatal, a girl of twenty, sick only six days) was evidently caused by sleeping almost directly over a privy which had not been cleansed for at least two years. Some of the others were caused by bad water, and some by privies in bad condition and too near sleeping-rooms.

Diphtheria. — One case, recovered. This case occurred in the house above referred to where the sink-drain leaked into the cellar, and was soon followed by the two cases of typhoid.

Hampton — W. T. MERRILL, M. D.

Typhoid Fever. — Eight cases, one fatal; seven cases in town; one fatal, in Rye. Can only say that the drinking-water was contaminated from vault in one case. One case came from Tilton; two cases followed, a son and a sister who acted as nurses. One case came from Newmarket. Am positive that two cases were the result of a badly constructed drain. Am in doubt as to the cause of the others.

Diphtheria. — None.

Hancock — EUGENE WASON, M. D.

Typhoid Fever. — Three cases, none fatal. Two cases caused by impure water; other, cause unknown.

Diphtheria. — None observed. In former years have observed that epidemics started under bad sanitary conditions and spread by contagion.

Hanover — William T. Smith, M. D.

Typhoid Fever. — None.

Diphtheria. — One case, recovered. Consider filth the most common source of the disease.

Hanover — C. P. Frost, M. D.

Typhoid Fever. — One case, recovered. Attribute the disease to the bacillus "for such cases made and provided."

Diphtheria. — None observed. Diphtheria is probably caused by some bacillus.

Haverhill — M. D. Carbee, M. D.

Typhoid Fever. — Toward the last of April I was called to a case of congestion of the liver, which a little later developed typhoid symptoms and terminated fatally. A little later a young man who boarded in the family had typhoid fever, which also proved fatal. There is a good supply of spring water throughout the village, but this family was supplied by a cistern of rain-water, and a well so situated that it received the drainage from the kitchen and barn. Old wells in close proximity to buildings should never be used for drinking or cooking purposes.

Haverhill — Phineas Spalding, M. D.

(In a letter from Dr. Spalding is the following in regard to the well next above referred to.)

A few years ago a well was dug about thirty feet from the sink, on a lower surface of ground. The surface soil between the well and house was very loose, but the sub-soil very hard. During the fall of 1885, and the winter and spring of 1886, the soil was full of water much of the time, and I have no doubt that it filtered into this well, from which much water was used in various ways. Although I did not attend the young man, yet I saw enough to convince me that his sickness and death were owing to improper sewerage, and water from this well. I have no doubt that cases of typhoid may occur where we cannot discover the exciting cause, but from long experience and observation, I am satisfied that from improper sewerage, drying up of swamps, and filth of various kinds, most cases of typhoid fever are produced. It gives me great satisfaction that the attention of the medical profession is of late years directed to a subject upon which the health and life of so many of our fellow beings depend.

Haverhill — S. P. CARBEE, M. D.

Typhoid Fever. — Two cases, neither fatal. Drinking-water polluted in both cases. Attribute the disease to filth.

Diphtheria. — None.

Hebron — GEORGE A. BLODGETT, M. D.

Typhoid Fever. — None in my practice during the year. Attribute the disease to bad drainage and water pollution, mostly.

Diphtheria. — None observed. Think diphtheria is essentially a filth disease, although I have known cases where the surroundings seemed good.

Henniker — GEORGE H. SANBORN, M. D.

Typhoid Fever. — Two cases, recovered. Drinking-water polluted in one case.

Diphtheria. — None.

Henniker — LEONARD W. PEABODY, M. D.

Typhoid Fever. — One case, recovered. Attribute this case to overwork.

Diphtheria. — Four cases, none fatal. Consider filth and badly ventilated dormitories the most common causes of diphtheria.

Hillsborough Bridge — A. C. BURNHAM, M. D.

Typhoid Fever.—Eight cases, two fatal. One case was contracted out of town, came here and died; very malignant. The other fatal case was an old lady previously broken down by ill-health and injuries. Two cases were in Deering. Think one case was caused by impure water; most of the others by taking cold.

Diphtheria — None observed.

Hillsborough Bridge — W. D. Otterson, M. D.

Typhoid Fever. — None in my practice. The sanitary condition of this town is, in my opinion, very bad.

Diphtheria. — None.

Hill — William F. Baldwin, M. D.

Typhoid Fever. — One case, fatal. Think this case was due, beyond a doubt, to a sink-drain directly under the pantry window where milk and food were always kept. Attribute the disease to filth.

Diphtheria. — None observed.

Hopkinton — G. H. Powers, M. D.

Typhoid Fever. — None observed. Attribute diphtheria to unhealthy ingestæ.

Diphtheria — None observed. Think the most common sources of the disease are filthy and decayed food, and air contaminated by sink-water, privy vaults, and filth left about by heedless families.

Hudson Centre — D. O. Smith, M. D.

Typhoid Fever. — Five cases, none fatal. Two cases in Windham. Frequently and generally attribute the disease to a special morbific agent derived from human fecal excrement. In one, and possibly more than one, case the drinking-water was contaminated. I regard it as a communicable disease.

Diphtheria. — None well defined. Think diphtheria is caused by badly constructed vaults and drains.

Jefferson — C. H. Burnham, M. D.

Typhoid Fever. — None.

Diphtheria. — None.

Keene — GEO. B. TWITCHELL, M. D.

Typhoid Fever. — One case; could discover no cause.

Diphtheria. — Four cases, one fatal. Think bad sewerage the most common cause of the disease.

Keene — A. B. THURSTON, M. D.

Typhoid Fever. — Three cases, none fatal. Two cases caused by unsealing of sink-drain trap by siphonage, said trap being unventilated; one severe case caused by undrained and filthy cellar. Consider most common cause to be filth and bad sewerage.

Diphtheria. — None observed. In my opinion diphtheria is commonly caused by filth, bad sewerage, and polluted water.

Keene — W. R. DUNHAM, M. D.

Typhoid Fever. — None observed.

Diphtheria. — Four cases, none fatal. Could not trace the cause.

Keene — GORDON C. HILL, M. D.

Typhoid Fever. — Twelve cases, none fatal.

Diphtheria. — Twenty cases, none fatal.

Keene — GEO. W. FLAGG, M. D.

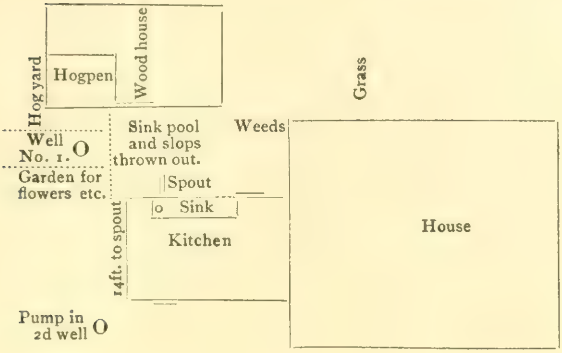
Typhoid Fever. — Three cases, none fatal. Most of them caused by impure water.

Diphtheria. — Five cases, one fatal. No local cause discoverable in these cases. Think the most common cause is filth, concentrated or confined air having slight access thereto.

Kingston — T. O. REYNOLDS, M. D.

Typhoid Fever. — Two cases, one in town, the other in adjoining town.

A well-marked case of typhoid occurred here, running twenty-six days,— young man eighteen years of age. Most of the

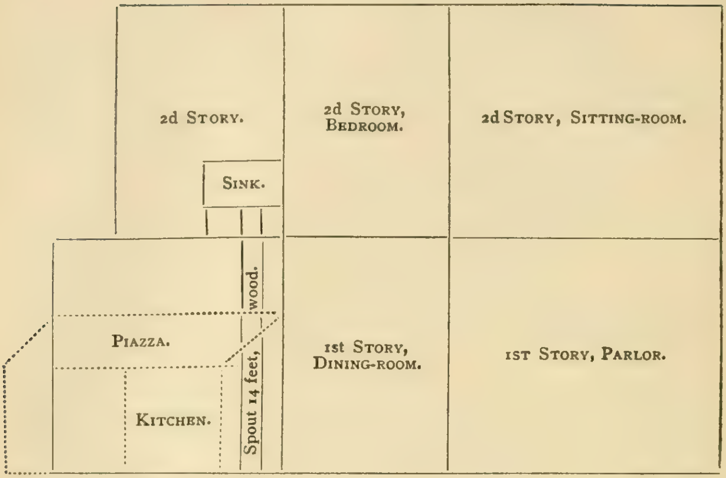


water used by the family was taken from well No. 2, but at this season, August, some was drawn from well No. 1. I did not especially examine the water, because I thought the surroundings spoke emphatically. We had the locality disinfected and no more water used from these wells during the season, and no more cases appeared.

The other case, in an adjoining town, was not so easily traced to the probable cause. Notwithstanding a very bad area at the "back door," something near two square rods covered with sink-water and table refuse decaying among rank weeds, the water used was from a well at the other side of the house and across the drive, in the garden's edge — distance, seventy-five feet. This well was on much higher ground, but was close to the cattle-yard, which was large and thoroughly cleaned since early spring. (This was in August.) The barn, however, was located on a hill sloping toward the well, and about forty or fifty feet from it. Under this barn a number of hogs were kept, and it is possible the contamination came from percolation thence. The water appeared excellent.

Diphtheria. — Four cases, one fatal. These cases occurred in a family occupying the second story, two children and the father and mother having the disease.

At the outbreak I instructed the family to search diligently and disinfect all areas which might be dangerous, taking pains to describe the same. By some misunderstanding or indolence, the



Pool, sink-water.

disease continuing, one after another coming down with it, I determined to make thorough search myself, when I found this long wooden sink-spout, about fourteen feet, which was utterly neglected. It was coated half an inch all around inside with the foulest of sink products, and under the rear piazza where it discharged was a pool of filthy sink-water, out of the sunlight, and protected from currents of air by its surroundings. This was thoroughly treated with boiling saturated solution of sulphate of iron, and subsequently several times with a hot solution of mercuric bichloride. There were other children and one young lady who did not have the disease. Each case, as soon as a symptom appeared, was isolated from the others in the house, so it is not probable that any subsequent case contracted the disease by contagion. No new cases occurred, and no indications of one were presented after the spout in question had been treated. I attribute the disease in this case to the lengthy, foul sink-spout, emptying under a back piazza, and uncared for, having its upper end opening into a small room adjacent to sleeping-room. Think emanations from decaying organic matter are the common cause of diphtheria.

Kingston — F. W. Ingalls, M. D.

Diphtheria. — Three cases, none fatal.

Laconia — Stephen Vittum, M. D.

Typhoid Fever. — Nine cases, one fatal. Think four of them were caused by unhealthy condition of premises, the waste of all kinds from the house being left on the surface of the ground. One case came from Littleton, and developed at once after reaching this town. In the other cases could discover no satisfactory cause.

Diphtheria. — Three cases, one fatal. No cause discovered.

Laconia — H. E. Mace, M. D.

Typhoid Fever. — Fourteen cases, three fatal; thirteen of them in town. Attribute nine cases to bad drainage and polluted water. In five cases cause not discovered.

Diphtheria. — None.

Laconia — T. S. Foster, M. D.

Typhoid Fever. — Have kept no record. There has been a greater tendency to typhoid conditions than for many years previous, with several well-marked cases, none fatal. Am unable to state the cause.

Diphtheria. — Not so many, I think, as in years previous; none fatal. In my opinion a majority of all cases have their origin in bad sanitary surroundings, though we may not always be able to locate it.

Lake Village — O. W. Goss, M. D.

Typhoid Fever. — Eleven cases, none fatal. It seems to me that the cause of typhoid fever in our village is obvious, viz., from nuisances, such as bad drains, excreta from privies and under barns, piggeries, and polluted water. I am of the opinion that one third or more were traceable to bad water, while others seemed to rise *de novo*, while still others were caused by gases that emanated from privies where the excreta from some typhoid fever patient had been cast. The outbreaks of typhoid fever occurred mostly during the months of August and September, and about the middle or last of October and November.

Lake Village — LEVI WARD, M. D.

Typhoid Fever. — Twenty-four cases, one fatal (typhoid pneumonia). Drinking-water contaminated in two cases.

Diphtheria. — Three cases, none fatal.

Lake Village — GEORGE F. ROBY, M. D.

Typhoid Fever. — From thirty-five to forty cases have occurred in my practice, two fatal. Three cases occurred at Laconia, one at Meredith, evidently contracted at the Weirs during August or September. In nearly all cases investigated I found either bad water, cesspools, or barnyards in too close proximity to house. Eight cases occurred in one house, and upon examination I found the well-water to be contaminated by the water from sink-drain running into it. In the thickly settled part of the village the people formerly used well-water mostly, and as the land is hilly they nearly all became impregnated with the poison from surrounding sink-drains, etc., and the water is unfit to use.

Diphtheria. — A few mild cases.

Lancaster — EZRA MITCHELL, M. D.

Typhoid Fever. — None.

Diphtheria. — One case, not fatal. This case was due to contagion from other cases in Jefferson.

Lancaster — E. F. STOCKWELL, M. D.

Typhoid Fever. — None in my practice. Attribute the disease to a specific poison.

Diphtheria. — One case laryngeal diphtheria, following measles, fatal. Attribute the disease to contagion.

Lebanon — THOMAS H. CURRIE, M. D.

Typhoid Fever. — Have had typhoid without the true accompaniments; none fatal. In past years I have invariably found sufficient cause for typhoid fever in the house or surroundings. Attribute the disease to bad hygienic conditions.

Diphtheria. — None. Think filth is the cause of the disease.

Lebanon — JAMES A. DAVIS, M. D.

Typhoid Fever. — Three cases, none fatal. Contaminated drinking-water in all cases. Think this is the most common source of the disease.

Diphtheria. — None.

West Lebanon — CHARLES B. DRAKE, M. D.

Typhoid Fever. — None.

Diphtheria. — One case in Hartford, Vt., recovered. Consider impure water and air the most common causes of diphtheria.

Lempster — J. N. BUTLER, M. D.

Typhoid Fever. — One case in an adjoining town, recovered. Attribute the disease to bad drainage, impure water, and bad sanitary conditions generally.

Diphtheria. — None observed.

Lisbon — C. H. BOYNTON, M. D.

Typhoid Fever. — Seventeen cases, none fatal; fourteen in town, three in Lyman. Know of no special cause unless in the three cases which occurred in one house in Lyman it was caused by a "slop-hole" near the bedroom window. Most of the cases were of a mild form, and were more of a typho-malarial character than I have observed before.

Diphtheria. — None.

Littleton — T. E. SANGER, M. D.

Typhoid Fever. — Twenty-eight cases, none fatal; sixteen in town, twelve in adjacent towns. Attribute the disease in all cases to impure water.

Diphtheria. — None in my practice. Consider impure air the most common cause of diphtheria; perhaps some cases due to contaminated water and contagion. The very dry summer of 1886 caused many springs always before considered "living" to dry up, or, at best, to have but little water; for that reason *all* our water was impure. My cases of fever were all light.

Littleton — GEORGE W. MCGREGOR, M. D.

Typhoid Fever. — Twelve cases, one fatal; four in town, one fatal; five in Bethlehem, three in Franconia. Attribute the disease to contaminated drinking-water in four cases beyond a doubt; decaying vegetables in an unventilated cellar in one case occurring in May.

Diphtheria. — Two severe cases in a family of several children, one fatal; the entire family had diphtheritic tonsilitis. The house stood on very moist ground; the dooryard was the cow-yard, the attic the henyard, and I am imformed by a brother M. D. that the parlor had been used for the pig-pen. In these cases the cause is patent.

Littleton — HENRY L. WATSON, M. D.

Typhoid Fever. — Have seen no cases the past year. Attribute the cause of the disease to a specific poison exhaled from putrifying animal and vegetable matter, which, when it finds lodgment in a susceptible individual, is as sure to develop typhoid fever as the virus of small-pox is that specific disease; that proper sanitary measures will do much to curtail its prevalence I have no doubt.

Diphtheria. — None observed. I attribute the disease to blood poisoning, the initial source of which is, I believe, still an unsolved problem in the field of science.

Londonderry — F. B. PERKINS, M. D.

Typhoid Fever. — Twelve cases, none fatal. Attribute the disease to polluted well-water and defective drainage.

Diphtheria. — None observed; several cases of tonsilitis. Attribute the disease to the inhalation of foul, gaseous elements, either of vegetable or animal origin.

Lyme — J. WALTER BEAN, M. D.

Typhoid Fever. — Four cases, none fatal; two in town, one in Orford, one in Thetford, Vt. Polluted drinking-water in two cases.

Diphtheria. — None observed.

Madison — GEORGE M. ATWOOD, M. D.

Typhoid Fever. — Three cases, one fatal; two cases were contracted at North Conway, one at the Merrill House being of interest. Henry S., aged 23, was occupied in carrying sink-water from barrels in basement into which it ran, there being some seventy-five pailfuls per day. Another part of his service was to clean the vaults daily, and, in addition, the windows of his sleeping-room opened directly over a hog-yard. This case was typical, and symptoms intense, with fatal results. One case was in Eaton. Attribute the disease to a peculiar specific poison, always with a filthy origin.

Diphtheria. — None observed.

Manchester — CHARLES T. FLANDERS, M. D.

Typhoid Fever. — Six cases, one fatal. In my opinion three cases were contracted while on vacations to the shores of lakes during low water, decaying vegetable matter, etc.

Diphtheria. — Seven cases, two fatal. Bad sanitary conditions in every case. Think the disease is most commonly caused by water standing in cellars, faulty drains and cesspools.

Manchester — JACOB W. MOOAR, M. D.

Typhoid Fever. — One case, recovered. There was no perceptible cause.

Diphtheria. — None observed.

Manchester — GEORGE D. TOWNE, M. D.

Typhoid Fever. — One case, recovered. Possibly due to carelessness in surroundings, as the patient had care of another case.

Diphtheria. — None.

Manchester — C. H. FESSENDEN, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None. Have been here but a few months, hence this meager report.

Manchester — R. O. WOOD, M. D.

Typhoid Fever. — Two cases, recovered. In both cases the drinking-water was more or less polluted. Attribute the disease to malarial influences.

Diphtheria. — Two cases, neither fatal. Attribute it to impure water.

Manchester — W. W. WILKINS, M. D.

Typhoid Fever. —None observed.

Diphtheria. — None. From what I have seen of the disease in former years am inclined to attribute it to the imperfect sewerage system.

Marlborough — J. A. LEET, M. D.

Typhoid Fever. — Six cases, none fatal. In five of my cases the cause was impure water contaminated by vaults, pig-sty and sink-drains, all being, I think, less than forty feet from and located on higher ground than the well where the water was procured.

Diphtheria. — None observed.

Marlborough — NATHANIEL H. MERRIAM, M. D.

Typhoid Fever. — Six cases, two fatal. In two cases the drinking-water was contaminated. Think the disease is most commonly attributable to improper sewerage and decomposing vegetable matter.

Diphtheria. — None observed.

Marlborough — MARSHALL PERKINS, M. D.

Typhoid Fever. —Four cases, none fatal. The cause was not clear to me.

Meriden — H. Cooper, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None observed during the year. Sanitary measures are more perfectly carried out than formerly.

Merrimack — Warren W. Pillsbury, M. D.

Typhoid Fever. — One case, recovered, in Litchfield; came from Greenfield, Mass. The patient claims that it was caused by bad drinking-water.

Diphtheria. — Two cases, both fatal, in Bedford. Attribute the disease to a germ, but have not much of an idea where the germ originates.

Meredith — George Sanborn, M. D.

Typhoid Fever. — None observed during the year. Think the disease is caused by miasm.

Diphtheria. — None. Have had cases of sporadic sore throat.

Milan — Joseph J. Cobb, M. D.

Typhoid Fever. — Four cases, one fatal. Drinking-water contaminated in all cases. Judging entirely from my own experience should attribute the disease, 1st, to overwork; 2d, exposure to contaminated air, and polluted drinking-water.

Diphtheria. — Four cases, one fatal; three cases in Dummer, one in Stark. In the three cases in Dummer, all in one family, the sanitary conditions were as bad as possible. Attribute the disease to a specific poison generated by, or located in, filth.

Milford — A. W. Smith, M. D.

Typhoid Fever. — None observed. Attribute the disease to contagion.

Diphtheria. — None observed.

Milford — H. S. Hutchinson, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None in my practice. Consider filth the most common source of the disease.

Milton —

Typhoid Fever. — None in my practice. Attribute the cause of the disease to bad sanitary conditions.

Diphtheria. — One case of diphtheritic croup, fatal. Think filth is the most common cause of the disease.

Mont Vernon — FREDERICK CHANDLER, M. D.

Typhoid Fever. — None in town. Think the most prominent causes of typhoid fever are stagnant cesspools and low water in wells.

Diphtheria. — None in town. Attribute diphtheria to a multiplicity of bad sanitary surroundings where families, predisposed to bad throats, are exposed.

Moultonborough — FRANK L. JUDKINS, M. D.

Typhoid Fever. — Five cases, one fatal. One case transferred from Lake Village.

Diphtheria. — Three cases, none fatal. Could not trace the cause. Think filth is the most common source.

Nashua — F. A. DEARBORN, M. D.

Typhoid Fever. — One case, recovered.

Diphtheria. — One case, recovered. Origin, untrapped drain-pipe.

Nashua — J. N. WOODWARD, M. D.

Typhoid Fever. — Four cases, one fatal. One case came from Mont Vernon, while the fatal case developed in a few days after returning from Flint, Mich.

Diphtheria. — None observed. Think contagion the most common source.

Nashua — W. H. DINSMORE, M. D.

Typhoid Fever. — Two cases, neither fatal. Drinking-water contaminated in one case. Believe in the germ theory of the disease.

Diphtheria. — One case, recovered. Sanitary conditions seemed nearly perfect. Think uncleanliness and bad drainage are often sources of the disease.

Nashua —

Typhoid Fever. — Four cases, one fatal, in Nashua; one case in Hollis. In three cases the drinking-water was contaminated; in the other two there was no positive proof of it. Consider bad drinking-water the most common source of the disease.

Diphtheria. — One case, fatal, complicated with pneumonia. Could discover no cause in this case. Think contagion is often the source.

New Boston — C. A. WEAVER, M. D.

Typhoid Fever. — Four cases in one family, one fatal. I found this family using contaminated water, the well being very near the sink-drain; also plenty of decomposed vegetable matter in the cellar. Attribute the cause of the disease to degeneration of animal or vegetable matter, or both.

Diphtheria. — None observed.

New Boston — H. D. GOULD, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None observed.

New Hampton — WILLIAM CHILD, M. D.

Typhoid Fever. — Four cases, one fatal. In three cases the drinking-water was surely contaminated. The fourth case was in a damp, shaded dwelling; walls often moldy.

Diphtheria. — None observed. Consider filth the most common source of diphtheria.

New Ipswich — FREDERIC W. JONES, M. D.

Typhoid Fever. — Not a case. One of the most important factors of the germ of typhoid fever seems to be impure and infected drinking-water; directly so whenever any of the excreta of a typhoid patient comes in contact with it. Fermentation favors the propagation of all germs, as the microscope reveals. Wind blowing over the muddy bed of a pond or river, after the water has been drawn off, is also in some cases the carrier of the germ, and those living in the immediate vicinity are liable to the disease.

Diphtheria. — Have not met with a case of genuine diphtheria. Filth and the non-observance of all sanitary laws certainly promote the disease. Attribute it to a specific germ.

New Ipswich — FREDERICK JONES, M. D.

Typhoid Fever. — None in my practice in town; have had several cases in adjoining towns. The drinking-water was probably contaminated in two cases. Emanations from decaying vegetable matter, polluted water, as well as contagion, seem to be common causes.

Diphtheria. — None in my practice in this town. In past years I have thought that dark and filthy places were favorable to the propagation of the germ of this disease.

New Ipswich — F. N. GIBSON, M. D.

Typhoid Fever. — Five cases, none fatal.

Diphtheria. — None observed.

Newmarket — CHARLES A. MORSE, M. D.

Typhoid Fever. — None observed.

Newport — AMANDA H. KEMPTON, M. D.

Typhoid Fever. — Three cases, one fatal. These cases occurred in one family, the first two being caused, I think, by sleeping in overcrowded, ill-ventilated rooms, they being young girls whose powers of resistance were lowered by factory work beyond their strength.

Diphtheria. — One case, recovered. A severe case of tonsilitis was caused, in my opinion, by polluted water.

Newport — D. M. CURRIER, M. D.

Typhoid Fever. — Two cases, not fatal. Traced one to direct contagion and one to polluted well-water from contamination by drainage from sink.

The soil in the vicinity of this well is of a light, gravelly nature. The drain was constructed of plank, and at the time of the sickness had become completely rotted out, so that it fell in pieces when being dug up. The water used for drinking purposes became as cloudy as milk and water when tested with nitrate of silver. I have no doubt that the sink-water leaching into the well caused the disease. The drain was replaced with plank, as before, which, I think, is not right, as it is liable not to be tight at first, and at all events will soon decay again. Such drains should be of tiling or of some other material that will not decay. The hog-pen was some fifteen feet from the well.

Diphtheria. — None observed.

Newport — WILLIAM W. DARLING, M. D.

Typhoid Fever. — Two cases, not fatal. Traced these cases to defective vaults in the house.

Diphtheria. — Six cases, one fatal. There were badly constructed vaults and cesspools, and one fatal case from polluted water.

Newton — J. F. AXTELL, M. D.

Typhoid Fever. — Not a case the past year.

Diphtheria. — Three cases, none fatal.

Northwood — C. W. HANSON, M. D.

Typhoid Fever. — Five cases, one fatal. Attribute the disease to impure drinking-water in most cases.

Diphtheria. — None observed. Think bad sanitary conditions the most common sources of the disease.

Northwood — J. W. PRAY, M. D.

Typhoid Fever. — Nine cases, two fatal; two, with one fatal, in town; three in Nottingham; two in Barrington; two, with one fatal, in Strafford. In five cases the drinking-water was contaminated. Contamination of water in four cases from Tilton; one case from Haverhill, Mass., caused by imperfect plumbing.

Diphtheria. — None observed.

Orford — E. C. CHASE, M. D.

Typhoid Fever. — One fatal case in Piermont; none in town; could discover no cause.

Diphtheria. — Four cases, none fatal, all in one family of eight children. Disinfected the house by burning sulphur freely, which I think prevented the disease from spreading.

Ossipee — WILLIAM M. MOORE, M. D.

Typhoid Fever. — None observed in my practice. Attribute the disease to impure water, defective drainage, and vegetable decomposition.

Diphtheria. — None observed. Think filth and polluted water the most common sources of the disease.

Ossipee — MELVIN A. HARMON, M. D.

Typhoid Fever. — Two cases, both recovered. Undoubtedly the disease is most often caused by the typhoid fever germ taken into the system; but it is hard to account for most of the isolated cases in the country. I have never been able to trace any of my cases to bad sanitation.

Diphtheria. — None observed. The only two cases that have occurred in my practice of eight years undoubtedly originated in bad sanitary conditions. From my study of the disease, I think filth the prime factor in the cause.

Ossipee Centre — WILLIAM H. GRANT, M. D.

Typhoid Fever. — None observed. I believe typhoid fever originates in some infectious agent caused by the decomposition of animal substances.

Diphtheria. — Three cases, two fatal. Think nearly every case may be traced to bad sanitary conditions, principally to polluted water.

Penacook — H. C. HOLBROOK, M. D.

Typhoid Fever. — Three cases, one fatal. Drinking-water polluted in all cases.

Diphtheria. — None observed.

Peterborough — JOHN H. CUTLER, M. D.

Typhoid Fever. — One case, severe, recovered. Think this case was contracted from a neighbor's children who had it, as the hygienic surroundings were perfect or nearly so.

Diphtheria. — None observed.

Peterborough — A. A. HAIG, M. D.

Typhoid Fever. — Two cases, not fatal, both in Harrisville. Could not trace cause.

Diphtheria. — One case, fatal; contracted while digging a drain through soil saturated with slops and vegetable matter thrown from kitchen. Think bad hygienic conditions and polluted water are common causes.

Peterborough — W. D. CHASE, M. D.

Typhoid Fever. — Three cases in one family, the first case fatal. The cause of the disease is a specific poison, and a large per cent of cases are contracted from drinking-water. Could not say that the water used in this family was contaminated; if it was it must have been from some occult source.

Diphtheria. — Two cases, one fatal. Could not attribute them to bad sanitary conditions.

Pittsfield — F. J. AIKEN, M. D.

Typhoid Fever. — Three cases, none fatal. There has been one fatal case in town. In two cases in one family the drinking-water was contaminated.

Diphtheria.—Three cases, one fatal. There have been six cases in town, within my knowledge, three of them fatal. My fatal case occurred in a family in which two other members were suffering from typhoid fever. The water was badly polluted by sink-drain and cesspool.

Plaistow — PITTS E. HOWES, M. D.

Typhoid Fever. — None observed.
Diphtheria. — None observed.

Plymouth — HAVEN PALMER, M. D.

Typhoid Fever. — One case, recovered.
Diphtheria. — None observed.

Plymouth — TRISTRAM ROGERS, M. D.

Typhoid Fever. — One case imported from Wells River, recovered.

Diphtheria. — None observed.

Portsmouth — S. C. WHITTIER, M. D.

Typhoid Fever. — Eleven cases, none fatal. Bad drainage and contaminated water in all of my cases.

Diphtheria. — Thirty-six cases, none fatal. I believe diphtheria may be generated in any debilitated system by simple cold, and almost believe that with unsanitary conditions the cold is almost absolutely necessary to start the disease into action.

Portsmouth — N. L. FOLSOM, M. D.

Typhoid Fever. — Six cases. My first case was caused by a cold, and four others in the same family followed. Cannot account for the other case.

Diphtheria. — Six cases. Think a cold is often the source of the disease.

Portsmouth —

Typhoid Fever. — Two cases, recovered.
Diphtheria. — Three cases, none fatal.

Portsmouth — J. W. PARSONS, M. D.

Typhoid Fever. — Two cases, recovered. One patient had made a long visit in Washington, D. C., and short visits in other places; fever developed in a few days after returning to this city. In the other case there was a bad condition of back yard and privy; good water. Cannot say what the cause may be.

Diphtheria. — None worthy of record. Think a cold is the most common cause.

Portsmouth — JOHN J. BERRY, M. D.

Typhoid Fever. — Two cases, neither fatal. Attribute the disease to a specific poison rendered active by certain atmospheric conditions.

Diphtheria.—Three cases, none fatal. First case directly traceable to neglected privy vault and defective drain; the second occurred in a damp and imperfectly drained locality; the third arose from contagion.

Raymond — TRUE M. GOULD, M. D.

Typhoid Fever. — Three cases, one fatal. One case due to bad condition of vault; one caused by bad drinking-water.

Diphtheria. — Two cases, neither fatal. Think perhaps contagion is the most common source of diphtheria.

Rindge — W. H. ALDRICH, M. D.

Typhoid Fever. — One case, recovered. Think this case was caused by decaying vegetable matter, as the family lived on the shore of a pond, and the water was low and stagnant.

Diphtheria. — None observed.

Rochester — FREDERICK E. WILCOX, M. D.

Typhoid Fever. — Nine cases, three fatal, of which two were suffering from external injuries received previous to the disease, and but for which recovery would have been quite probable.

Diphtheria. — One case, recovered.

Rochester — JAMES FARRINGTON, M. D.

Typhoid Fever. — Three cases in town, none fatal.

Diphtheria. — Six cases in one family, one fatal; two cases in another. In the first mentioned family the sink-water ran on the ground some ten or twelve feet from the well.

East Rochester — STEPHEN YOUNG, M. D.

Typhoid Fever. — One case, not fatal. The disease was contracted at Lebanon, Me., some eight miles distant; the patient worked in a country store where the sanitary conditions were not good.

Diphtheria. — One case, recovered; could not discover cause.

Rollinsford — F. E. BRIGHAM, M. D.

Typhoid Fever. — None observed.

Diphtheria. — Two cases; both cases caused by exposure to the disease in other towns.

West Rumney — OSCAR L. CORLISS, M. D.

Typhoid Fever. — Two cases, one fatal; one in Dorchester, one in Wentworth.

Diphtheria. — None observed.

Sandwich — E. Q. MARSTON, M. D.

Typhoid Fever. — None observed during the year. Attribute the disease to germs from previous cases of the same disease carried in drinking-water.

Diphtheria. — None observed.

Sandwich — F. S. LOVERING, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None observed.

North Sandwich — A. H. HARRIMAN, M. D.

Typhoid Fever. — No typical case during the year. The conditions here seem to be favorable for this disease, but we are exceptionally exempt.

Diphtheria. — None observed.

Seabrook — D. W. COLCORD, M. D.

Typhoid Fever. — Two cases, recovered. The drinking-water was polluted in one case.

Diphtheria. — Fifteen cases, one fatal, all in town.

Somersworth — ALVIN JENKINS, M. D.

Typhoid Fever. — Ten cases in one locality last spring, two fatal. I am inclined to think their proximity to the river, about 100 feet, from which more or less vapor arises morning and evening, was the most probable cause, as there seemed to be no bad sanitary conditions otherwise.

Diphtheria. — Four cases on the Berwick, Me., side of the river; none fatal. Three cases occurred in a family in which I had two cases of typhoid fever three years ago. The house, a small one, stands on a sandy, almost barren plain land; the well is some twenty-five feet from privy, etc.

South Newmarket — A. H. VARNEY, M. D.

Typhoid Fever. — Eight cases, one fatal; six in town, with the one fatal; two in Exeter. Polluted well-water used in all cases.

Diphtheria. — Fourteen cases, one fatal. Attribute the disease to foul gases, individual predisposition, and personal contagion. Could trace all my cases to contagion.

West Stewartstown — F. I. RAMOS, M. D.

Typhoid Fever. — Two cases, recovered.

Strafford — N. C. TWOMBLY, M. D.

Typhoid Fever. — Two cases, not fatal. I think there have been two fatal cases in town, one of them from Tilton. Attribute the disease to a germ taken into the system through ingesta, inhalation, or absorption.

Diphtheria. — None observed. Think diphtheria is commonly due to direct contagion.

North Sratford — CHARLES E. THOMPSON, M. D.

Typhoid Fever. — Eighteen cases, three fatal; ten cases, two fatal, in town; seven cases, one fatal, Bloomfield, Vt.; one case Brunswick, Vt. Do not know what caused the disease, unless it was low water.

Diphtheria. — None observed.

Sunapee — E. C. Fisher, M. D.

Typhoid Fever. — One case, recovered. I think the well was too near the barnyard, although they called the water good. Think the cause is generally contaminated water or food.

Diphtheria. — None observed. Attribute the disease to filth and contagion.

Suncook — J. R. Kimball, M. D.

Typhoid Fever. — Two cases, recovered. The drinking-water may have been polluted, but I believe there are contaminated wells in many places where typhoid fever is not a result.

Diphtheria. — A dozen or more cases, two fatal, all in town. Nearly every case was surrounded by more or less of those conditions which are said to give rise to the disease. I do not know the source of either disease.

Suncook — G. H. Larabee, M. D.

Typhoid Fever. — Three cases, one fatal. Do not know the cause.

Diphtheria. — Three cases, two fatal. The sanitary conditions were very bad, but cannot tell to what extent they were a factor in the cause or severity of the cases. Do not know the cause.

Surry — W. H. Porter, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None observed.

Sutton — S. N. Welch, M. D.

Typhoid Fever. — There has not been a case of typhoid fever, diphtheria, or scarlet fever in town during the year. Thanks to the teachings of the board of health, aided by the physicians, the people in this section are learning the importance of healthy sanitary surroundings, the lack of which, in my opinion, is the most important factor in the production of nearly all zymotic diseases.

Tilton — John J. Dearborn, M. D.

Typhoid Fever. — Nine cases, two fatal. Typhoid fever has been unusually prevalent throughout the village portion of the town during the past season. Two cases in one house are known to have been caused by polluted well-water. Families previously residing in the house have been ill every time this well-water has been used for drinking purposes. One fatal case arose from using water from a well badly polluted from a livery stable. The mother and children suffered from depraved appetites and diarrheas during the summer, and later the father had the same complaint. Another fatal case is traceable to improper sanitary conditions. My cases, with one exception, were traceable to impure water, filthy drains, etc. Typhoid fever, diphtheria, etc., will continue in Tilton village until water from a pure source is provided and a perfect system of drainage adopted.

Diphtheria. — None in my practice.

Troy — M. T. STONE, M. D.

Typhoid Fever. — None observed.

Diphtheria. — Seven cases, one fatal; could not determine the cause.

Tuftonborough — T. AVANS HALEY, M. D.

Typhoid Fever. — Two cases, neither fatal. Impure water in both cases.

Diphtheria. — None observed. Think bad sanitary conditions the most common source of diphtheria.

Union — JOHN E. SCRUTON, M. D.

Typhoid Fever. — One case, recovered. Patient came from Boston, having the disease before leaving that city.

Diphtheria. — None observed.

Wakefield — SAMUEL W. ROBERTS, M. D.

Typhoid Fever. — None observed.

Diphtheria. — None observed. My very worst cases in the past have occurred where the sanitary conditions were good. Consider contagion the secondary cause; the primary I do not know.

Walpole — W. B. Porter, M. D.

Typhoid Fever. — None observed.
Diphtheria. — None observed.

Walpole — George A. Blake, M. D.

Typhoid Fever. — None observed.
Diphtheria. — None observed.

Walpole — A. P. Richardson, M. D.

Typhoid Fever. — Five cases, none fatal. Two cases in one family occurred after the return of an older brother who had had the disease in Brattleborough, Vt. Could not trace the cause in four cases. The fifth occurred in the person of a married woman twenty-four years old, who lived in an old house situated in a very low meadow near a small pond which exposed much muddy bottom during the drought of the fall, and was surrounded by numerous open, nearly dry ditches which carry sluggish water in wet times. The fever was quite high for a few days, then seemed to be of the abortive type. Four weeks after this the patient was seized with cerebro spinal meningitis and died in three weeks. The water was excellent in all cases, so far as I could judge, coming from pure springs on sidehill.

Diphtheria. — None observed. Attribute the disease, first, to contagion; second, filth.

Warren — Robert E. Merrill, M. D.

Typhoid Fever. — None in town.
Diphtheria. — None in town.

East Washington — George N. Gage, M. D.

Typhoid Fever. — Two cases, neither fatal; both cases occurred in women whose strength had been overtaxed by prolonged and excessive labor and care. There was no evidence of contaminated drinking-water.

Diphtheria. — None observed.

Weare — FRANK EATON, M. D.

Typhoid Fever. — One case, recovered, in Dunbarton ; drinking-water was contaminated from sink-drain.

Diphtheria. — None observed.

Webster — NATHANIEL H. AREY, M. D.

Typhoid Fever. — Five cases, one fatal. Attribute the disease to depression of the vital forces. Unsanitary conditions may be a factor, but not always.

Diphtheria. — Five cases, one fatal. Atlribute the disease to scrofulous diathesis, weakened vitality, cold an excitant. Have had long experience in the disease, and have observed that it occurs for the most part near ponds or running water, — locations well calculated to develop consumption.

Wentworth — GEORGE E. EMERSON, M. D.

Typhoid Fever. — One case, recovered ; cause unknown.

Diphtheria. — Four cases, none fatal. Bad sanitary conditions in two cases. Have no knowledge that either case was exposed ; beyond this do not claim to know what the cause may be.

Westmoreland — J. A. CRAIG, M. D.

Typhoid Fever. — None observed.

Diphtheria. — One case ; bad drainage.

Whitefield — J. L. MCGREGOR, M. D.

Typhoid Fever. — Three cases, none fatal; drinking-water contaminated in all cases. Attribute the disease to filth.

Diphtheria. — Sixteen cases, three fatal. All cases from polluted water and contagion. Think the most common causes are contagion and bad sanitary conditions.

Whitefield — GEORGE S. GOVE, M. D.

Typhoid Fever. — None observed.

Diphtheria. — One case, fatal. This case was a woman thirty-two years of age, who washed on Monday, and in hanging out the clothes was exposed to the cold wind; she died in one week, of paralysis of the heart at last. Attribute the disease to exposure and contagion.

Wilton — J. FLEEMAN, M. D.

Typhoid Fever. — Seven cases, one fatal. Do not know what caused the disease.

Diphtheria. — Two cases, neither fatal. Could not discover the cause.

Wilton — GEORGE W. HATCH, M. D.

Typhoid Fever. — Three mild cases; polluted water in one case. Attribute the disease to filth.

Diphtheria. — None observed. Attribute diphtheria to neglected drainage and similar causes.

Woodsville — C. R. GIBSON, M. D.

Typhoid Fever. — Two cases, neither fatal. Attribute the disease to overwork, bad water, and drainage.

Diphtheria. — None observed.

Wolfeborough — R. H. KING, M. D.

Typhoid Fever. — Four cases of regular typhoid, with others of more or less typhoid symptoms; none fatal. Think the disease is caused by imperfect drainage and impure water, principally.

Diphtheria. — Ten cases, two fatal. Think bad sanitary conditions have had very much to do with all of them. Consider impure water the most common source of the disease.

Wolfeborough — N. H. SCOTT, M. D.

Typhoid Fever. — Three cases, none fatal; two in town, one in Durham. Impure water in two cases. Consider this the most common cause.

Diphtheria. — Forty-three cases, six fatal; thirty-eight cases in town, five fatal; five, with one fatal, in adjoining town. Think contagion is the most common cause, although unsanitary conditions make one more liable to take it.

Last fall you requested me to give a history of the epidemic of diphtheria that we were having, and its connection with the drinking-water analyzed by you. I thought it better to wait until the close of the epidemic before replying. Unfortunately it has not yet ceased (January 25, 1887), there having been two deaths from it since the commencement of the present year. I will therefore give you a condensed report of the cases seen by me previous to January 15, 1887.

The epidemic commenced among the pupils of the public schools in June, 1886. An examination of the premises showed that the privies were in a filthy condition, so much so that the odor penetrated all the schoolrooms, and could be detected over much of the playground. Most of the scholars drank water from a well of which the following is an analysis:

Slight odor. Slight yellowish tint. Ammonia, above 0.1. Chlorine, 4.2. Trace of nitrous acid. Some nitric acid. Residue blackens decidedly upon ignition. Few bacteria. Bad water.

Some of those attacked were also drinking impure water at home and were exposed to unsanitary influences. After the close of the school there were no new cases until August, since which time we have been free from it but a few days at a time. I saw, besides the cases seen in consultation, forty-three cases which I reported to the board of health as diphtheria. Besides these I saw a large number of "sore throats," some of which were probably diphtheria, although not reported as such. I have included in this list, however, only those cases which had a well-marked membrane or were followed by some of the sequelæ of the disease.

That there is no mistake in the character of the epidemic is shown by the fact that some of the light as well as some of the fatal cases have been seen by some of the most experienced physicians in this vicinity, and all pronounced them well-marked cases of diphtheria.

The low rate of mortality was due partly to the mild character of the epidemic, and partly to the advanced age of those attacked.

Of the sixteen cases under ten years of age, four died, or twenty-five per cent. Of the twenty-seven cases above ten years of age, two died, or seven per cent. In every case search was made for the cause. Where several *possible* causes were found I give all, as it is impossible in an individual case to say which was *the* cause:

(*a*) Six cases breathed impure air and drank water from the well. An analysis is given above.

(*b*) Two cases, the same, also used water from a well which was analyzed as follows:

Clear. Odorless. Chlorine, 7.5. Free ammonia, above 0.1. No lead. Trace of nitric acid. No nitrous acid. Residue darkens. Bad water.

(*c*) Two cases, impure air, and water as follows:

Odorless and colorless. Chlorine, 5 grains per gallon. Free ammonia, more than 0.1. Nitric acid, much. No nitrous acid. No lead. Residue darkens some on ignition. Sediment, some. Bacteria. Bad water.

(*d*) Five cases, same as last, and contagion.

(*e*) Six cases, contagion and probably impure water. (Water not analyzed, but location bad.)

(*f*) Twelve cases, contagion and no other known cause.

(*g*) Seven cases, no known cause.

(*h*) Two cases, well-water analyzed as follows:

Clear. Odorless. Chlorine, 7.5. Free ammonia, above 0.1. No lead. Trace of nitric acid. No nitrous acid. Residue darkens. Bad water.

(*i*) One case, well-water analyzed as follows:

Odorless and colorless. Free ammonia, trace. Chlorine, 2.5 grains per gallon. No nitrous acid, but some nitric acid. Sediment slight. Residue darkens but slightly on ignition. Few bacteria. Very suspicious water and it will grow worse.

I believe that the disease is contagious and that unsanitary surroundings render one more liable to it. Whether or not the latter can *cause* it, is to me uncertain. Is it not more probable that unsanitary surroundings may be the powder, and the diphtheritic germ the spark that explodes it? Whichever is true, the practical lesson is the same.

To avoid all risk of taking diphtheria, one must drink pure water, breathe pure air, and keep away from all persons affected with the disease.

TYPHOID FEVER.

The following is a tabulated statement of the causes of typhoid fever, as given in the reports of physicians for the years 1882, 1883, 1884, 1885, 1886:

CAUSES.	1882	1883	1884	1885	1886
Polluted water	36	36	45	53	66
Filth	10	20	18	17	14
Bad drainage	7	9	2	6	2
Low water	5	4	4	....	1
Sink	4	4	5	2	4
Privy	3	....	3	....	2
Decaying vegetable matter	2	4	....	5	5
Infection	3	....	2	....	....
Contagion	1	3	4	....	3
Bad ventilation	2	....	....	....	1
Sewer gas	....	3	....	....	1
Malaria	....	3	1	....	2
Overwork	2	1	1	4	3
Low vitality	2	....	....	....	3
Foul cellar	....	2	....	....	....
Atmospheric causes	2	....	1	....	....
Swampy land	1	.....	....	....	....
Bed of pond	....	....	1	....	....
Newly plastered house	....	1	....	....	....
Sink and privy	1	....	....	....	2
Nervous exhaustion	....	....	....	1	....
Cold	....	....	....	....	2
Specific poison, or germ	....	....	....	11	19
Total causes reported	81	90	87	99	120
Causes not discovered	11	23	22	19	9
Number who gave no answer to question of origin	103	32	82	91	79
Total number of physicians reporting	195	155	191	207	208

There are two noticeable features in the above table, to wit: The increase in the number reporting water pollution as a cause of the disease, and in the number who have adopted the germ theory. A critical examination of the physicians' reports would show that the classifications are somewhat arbitrary, inasmuch as that in many cases a variety of causes are given, while but one is classified. Frequently other conditions were associated with water pollution, and this the tabulated statement does not show. In some cases the sanitary conditions were stated as being bad, but are not asserted to have been the cause. There ought to be sufficient evidence in the foregoing reports to convince any reasonable mind that unsanitary conditions bear a causal relation to the disease named.

Typhoid fever has long been regarded as being dependent for existence upon unsanitary conditions, and by common consent is classed among the filth diseases. Whenever it springs up apparently independent of infection or contagion, it is pretty certain to be associated with some unsanitary condition about the house in which it is found. The same observations in relation to the prevalence of typhoid fever have been made by physicians and health departments throughout the entire domain of civilization. The evidence is overwhelming to show that the most prolific cause is polluted water; that it may arise from other unsanitary conditions is also well established. The water supply of very many families in this State where the disease has occurred has been analyzed, and almost without exception found to be dangerously polluted by household drainage: from the sink-drain, privy, stable, or cesspool. The disease may also be produced by poisonous emanations from sewers, cesspools, etc. This fact has been conclusively demonstrated by many observers, among whom is Prof. J. H. Raymond, Brooklyn, N. Y., formerly health commissioner of that city. He reported an epidemic in that place with 150 deaths. Drinking-water had no connection with the disease in this instance. The cases were carefully investigated, and in every instance faulty plumbing was found. The sewers were disinfected and the epidemic ceased. The evidence was conclusive that the disease propagated by the sewers.

As a safeguard against infection from sewers he recommends:

1. See that the plumbing is in good condition.
2. See that the discharges of typhoid patients are disinfected.
3. See that the public sewers are disinfected.

This, of course, is applicable only to cities and larger towns; but the principle may be applied in all localities. Typhoid fever is closely allied to filth in some form and there is no conceivable unsanitary condition that may not be a factor in its production. The person who, being enlightened upon the subject, still neglects to keep his premises in a healthful condition, commits a crime. The laws of sanitation are so well established and so well known that ignorance is no longer excusable.

In 1883 there were reported in the State 166 deaths from typhoid fever; in 1884, 151 deaths; in 1885, 136 deaths. [1886 not yet tabulated.] It is gratifying to note the decrease in this disease, although there has been an increase in the total number of deaths reported from all causes, owing to the more complete registration under the new law.

DIPHTHERIA.

The following table is interesting in showing a partially classified arrangement of the reported causes of diphtheria for the past five years:

CAUSES.	1882	1883	1884	1885	1886
Bad sanitary conditions	20	30	16	25	26
Contagion	13	18	5	15	13
Polluted water	6	3	3	16	10
Bad drainage	5	6	5	4	7
Sink	6	....	3	1	4
Atmospheric causes	5	5	7	3	2
Filth	3	4	6	20	24
Decaying animal and vegetable matter	3	2	....	2	1
Cesspool	2	1	2	....	....
Damp and foul cellar	....	....	5	....	....
Exposure to dampness	1	3	3	....	....
Poor ventilation	1	1	1	....	1
Local cause	1	1	....	....	....

CAUSES.	1882	1883	1884	1885	1886
Malaria	....	1	....	2	1
Cause not discovered	12	17	17	5	6
Neglected vaults	....	....	....	2	2
Infection	....	....	....	1	1
Cold	....	....	......	3	3
"Scrofulous diathesis"	....	....	....	1	1
Specific germ, or poison	....	....	....	5	7

The evidence contributed by the physicians of the State during the past five years, upon the subject of diphtheria, shows that like typhoid fever it is dependent upon filth conditions for its existence.

The opinion prevails that it is more generally caused by poisonous emanations than by polluted water, in this respect differing from typhoid fever. The following are the chief causes assigned, ranking in the order given : Bad sanitary conditions, filth, contagion, and polluted water. The contagiousness of the disease is fully settled, and it should be subject to the same rules and regulations that govern small-pox and scarlet fever. There is no doubt that the isolation of every case would save many lives annually. The testimony of the physicians on this point has been given in former reports of this Board, and shows how generally they believe that isolation would reduce the spread and fatality of diphtheria.

As in all other diseases of like character, it is not always possible to trace the cause ; but the intelligent physician of today believes that every specific disease, of whatever nature or kind, is produced by some special cause, and the fact that diphtheria almost always exists under the influence of visible or discoverable sanitary defects is strong evidence that such conditions play a large and prominent part in its propagation.

Several marked instances of what seemed to be a spontaneous development of diphtheria from unsanitary conditions have been observed by the writer. In November last, the disease appeared in a family living in Chichester, consisting of husband, wife, and nine children. There were five fatal cases in rapid succession. The location was a farmhouse one half mile or more distant from any other family, and no diphtheria existed in the vicinity at the time. Briefly stated the circumstances were thus: The house was a one-story ordinary farmhouse, but the entire family lived in one room in which were two beds, a cradle, cook-stove, table, and a few dilapidated chairs. They were comfortably well off, owning the farm, a herd of six or eight cattle, a horse, a piece of wood land in another part of the town, and had considerable money in the bank. The entire house presented a most filthy and poverty-stricken appearance. The miserly instincts of the man had caused him to withhold from his family every possible convenience and comfort of life, and to turn every salable product of the farm into money. These nine children were insufficiently clothed, were almost entirely deprived of meat food, their chief diet being very small (unsalable) potatoes and bread made from middlings, and they slept in filthy rags. Their condition can scarcely be described.

The case was so bad and inhuman in all respects that the people of Chichester called for the appointment of a local board of health to investigate and act in this particular instance. The secretary of this Board visited the premises in order to be able to advise and assist the local board from a personal knowledge of the existing circumstances. The disease was of a most malignant type, the little patients living only a very short time after the attack. There was no evidence of contagion, and all the circumstances seemed to indicate that the disease was the spontaneous result of the unsanitary conditions which the poorly nourished children were unable to resist.

It should be remarked in connection with this case that the Board found some difficulty in dealing with the ignorant and brutal father of the children. It was deemed best by the Board, and also by leading citizens of the town, to have a guardian appointed, but it was found that while the law provides for guardianship in the case of a spendthrift or an insane person, it allows a miser to deprive his family of the comforts of life.

The local board of health were directed by this Board to take charge of the premises and to provide the family with such necessities of life as were immediately needed and to assess the cost against the father of the children.

Another case occurred in the town of Bartlett, during the past winter. Diphtheria appeared at an old farm mansion in which the family had lived for more than fifty years. The disease was exceedingly malignant and was fatal to four members of the household, one male adult and three children. An examination of the premises revealed the fact that the cellar was constantly wet and in it were small pools of stagnant water filled with masses of mold and other vegetable growths. The cellar walls and all the woodwork were damp and covered to a large extent with mold. Two sink-pipes discharged under the buildings, the waste running at large. The entire buildings were in an unhealthy condition, owing to age, dampness, and decay. The well-water which supplied the family was found, upon analysis, to be polluted.

This was a marked instance in which a family of more than ordinary intelligence and culture, having become accustomed to existing conditions, failed to observe or appreciate the dangers to which they were being subjected. The several physicians who visited the cases were unanimous in the opinion that they resulted from the conditions above described.

The Chichester case in its entirety may be looked upon as exceptional; but conditions almost precisely like those described in the Bartlett case probably exist in every town in the State. Such instances should lead every family to carefully guard their premises against any and all unsanitary conditions.

LEAD POISONING.

There is no doubt that lead poisoning is much more frequent than is generally known. Incidental reports made to the Board from time to time, and the numerous instances in which lead is found in the examination of water, lead to the belief that lead poisoning is not an uncommon occurrence. In the analyses of water which have been made under the direction of this Board, lead in dangerous quantities has several times been found when not suspected of being present in the water. This condition has obtained in connection with wells where the water was pumped through only a few feet of lead pipe, as well as with springs where greater lengths of pipe were used.

Some soft waters do not act upon lead pipe after it has been in use a short time, because an insoluble oxide is formed that prevents further action ; but this result depends entirely upon the character of the water. In shallow, polluted wells the action is generally constant and in some instances very rapid. Whenever possible, lead pipe should be avoided in conveying water for domestic purposes. If the use of such pipe becomes necessary, a test should be made to determine the action of the water upon the lead. Below are extracts from reports upon the subject, made by physicians during the year. Had a special report been asked for, it is probable that many more cases would have been reported.

Goffstown Centre — CHARLES F. GEORGE, M. D.

I have had during the year two well-marked cases of lead poisoning, both from the same cause, *i. e.*, drinking cider that had been pumped through a lead pipe. It has been, and is, a custom which prevails to some extent in this vicinity, to siphon the cider into the cellar to save work. This has been done frequently by means of lead pipe. After using these pipes they are carefully coiled up and laid away for another season. Any one can understand that the cider remaining in the pipe would corrode it, and this remaining through the year would, when next used, strongly impregnate the first cider run through. In my cases they began to drink the cider first passed through the pipe and both suffered quite severely in a few weeks as a consequence.

Grafton — GEORGE W. WEYMOUTH, M. D.

Three cases of lead poisoning in different families. One case, a man aged fifty-five years, caused by drinking cider run through a lead pipe. Paralysis and muscular pains; recovered although he was sick a number of months.

Second case, a lady. Colic, paralysis, muscular weakness, and pains. A lead pipe had been recently laid and a family of four drank water conducted through it. The lady was the only one seriously affected. Husband had slight colic, rest of family unaffected. The old pipe taken up previous to laying the new one had been laid for over thirty years and was badly eaten its entire length, but no cases of poisoning had ever occurred. The lady recovered with no paralysis.

The third case was slight in its effects but undoubtedly due to lead.

Hanover — WILLIAM T. SMITH, M. D.

Have had three cases of lead poisoning from drinking cider siphoned from the barrel through lead pipe.

Salisbury — G. P. TITCOMB, M. D.

Three cases of lead and copper poisoning caused by water drawn from a well fifty feet through a lead pipe by means of a copper pump. Two of these had suffered for some time from what was supposed to be chronic dyspepsia. Had the pipe and pump removed. All have recovered and seem to be in perfect health.

Milan — J. J. COBB, M. D.

During the past year I have had in my practice two cases of lead poisoning, caused by drinking water conveyed through a lead pipe. One of these cases is now under observation; the other occurred last September. . . . The chief complaints, however, were abdominal pain and general weakness, and, knowing that the patient had, the previous fall, laid a lead pipe to convey water to his house from a spring 150 rods distant, of which he had been drinking freely, and thinking of the possibility of lead poisoning, I then examined his teeth and found upon all of them the "blue line" at the margin of the gums. The case then became plain and the diagnosis established.

In connection with this case I will simply add that the winter previous the water in the pipe became frozen and ceased running for several weeks, or until spring. When the water again started it was very dark, almost black, until the pipe was emptied, and smelled bad. After running a day or two the family began its use and the patient drank very freely during the spring and summer while laboring upon his farm. Inasmuch as many families within the precincts of every busy practicing physician are using aqueduct water conveyed through lead pipe, is it not possible, yes, probable, that many cases of general debility, with functional derangement of bowels, liver, or kidneys, even where no such marked symptoms as "colic," "paralysis" etc., occur, or cases diagnosed "rheumatism," are produced by the slow accumulation of this poison? Believing this to be far from uncommon, I would respectfully urge physicians to be watchful and suspicious in all cases of lingering illnesses where the patient has been exposed to lead contaminations, and particularly so if the patient is a daily user of a tooth-brush, which prevents the formation of the diagnostic blue line.

The symptoms which follow in cases where lead is taken into the system are varied and sometimes many. Its most active effects are manifested either by intestinal spasm (colic) or paralysis. The muscles and nerve centers are functionally or organically affected, while other organs and parts of the body suffer to a corresponding extent. The effect of lead poisoning is sometimes serious from the first, and its results irreparable. On the other hand, the poisoning may be slow and long continued, and the true cause remain undiscovered until "wrist drop" or some other form of sudden muscular paralysis reveals the cause. The accumulative character of the poison renders it an exceedingly dangerous one.

ANNUAL INSPECTION OF RAILWAY STATIONS AND GROUNDS.

Two years ago the State Board of Health commenced a systematic sanitary inspection of the railway stations and grounds in the State. In the annual report of the Board for 1886 may be found an account of the work done in 1885, with a statement of the objects of such work which were embraced under three heads as follows:

1. The health and comfort of the traveling public.
2. The interests of the railroads themselves.
3. The interests of the State as a summer resort.

Two years' observation has convinced us that the sanitary supervision of railway stations by state authority is conducive to the interests of both the public and the railroads. The progress of the age renders it necessary, and the traveling public have a right to demand, that transportation companies use every means within their power to insure safety and comfort to their patrons, and this is impossible without attention to general cleanliness in and about the stations.

Aside from the question of health, which naturally suggests itself in this connection, the railroads should, from an economical motive, exercise a careful and constant supervision over the sanitary care of stations and grounds. Buildings properly drained, ventilated, and cleansed require but a small annual outlay to be kept in good condition, while if these matters are neglected, the place is not only unsightly and unwholesome at all times, but the outlay in the end must be much greater. Argument is unnecessary with those who have considered the subject, and it is with pleasure that we are able to record an improvement in the care of the railroad stations and grounds in the State. In exercising our duties in this work we have been as mindful of the interests of the different railroad corporations as of the public, for there is no dividing line between them. The interests of the one are inseparably connected with the interests of the other. Most instances of neglect in the sanitary care of the stations have been due to the carelessness of the local agent, and this must always be the case when good structural conveniences are provided by the company. The fact that an inspection of the premises is liable to be made by an officer of the Board at any time, causes not a few station agents to exercise more care than formerly. The Board has in a few instances found it necessary to request the agent to give more attention to these matters, and the result has been satisfactory.

Our relations with the lines inspected have been most amicable; indeed, they have evinced, without exception, a strong desire to make such improvements and changes as have been necessary, and where delay has occurred in inaugurating such changes, it has been occasioned by the magnitude of the obstacles to be overcome.

Nothing disgusts the traveler more than a filthy toilet room in a railway car or station, and such should not be allowed to exist. The station agent should be held responsible for the condition in which his station is kept, provided the same is properly constructed.

Most of the railroad corporations doing business in this State furnish disinfectants sufficient for the legitimate use of the stations. No agent, however, should expect that a disinfectant occasionally, or even daily, used will take the place of cleanliness; it should be used only as an adjunct to cleanliness. Railway sanitation is a matter of great importance in connection with the summer travel in the State. This fact is well recognized by the managers of our several railway lines, and a marked improvement in the ease, comfort, and healthfulness of transportation has been attained within a few years.

BOSTON & LOWELL RAILROAD.

SOUTHERN DIVISION.

(Wilton R. R.)

This line extends from Nashua to Wilton, and with the exception of some faults at the latter station is in excellent condition. Some improvements have been made since our former inspection. At Nashua the latrine at the passenger station has been ventilated and the general condition of the premises is now good. The station at Wilton is not what it should be. The closet is badly situated and is at times offensive. Its location in the building is such that it cannot be bettered to any great extent. A different situation is suggested, with a more modern construction.

(Peterborough R. R.)

This line is from Wilton to Greenfield. The general condition of the stations is neat and the accommodations ample.

(Manchester & Keene R. R.)

From Greenfield to Keene. The stations on this line compare favorably with those found upon the connecting lines. The sanitary conditions were found to be good or fair in all the stations inspected; some of the smaller stations were not examined. It may be remarked that the company has expended a large sum of money within the year in improving the road-bed, bridges, and trestles, and the safety and comfort in passing over the road have been greatly augmented.

NORTHERN DIVISION.

(Peterborough & Hillsborough R. R.)

From Hillsborough to Peterborough. The stations at Peterborough, Hancock Junction, Antrim, and Hillsborough, are ample, and were found in good condition. Some suggestions were made in answer to the interrogatories of some of the agents in relation to the care of stations.

(Concord & Claremont R. R.)

From Concord to Claremont, with branch from Contoocook to Hillsborough. The general condition of these lines is good. At Contoocook alterations were being made in the station, but it has not been inspected since completion. At Warner the closet is not connected with the station; was in good condition. At Bradford the station is old and dilapidated, although in a fair condition. The station at Newbury has but one small waiting-room which, during the summer travel to Sunapee Lake, is much too small; the station is in a fair condition. At Sunapee the sanitary conditions were bad. The agent had not caused the privy to be cleansed during the season. At Claremont there is some trouble with the station, probably due to a damp, undrained site. It is a fine station built of brick, but there are present much of the time a dampness and an odor which are undoubtedly due to the cause mentioned above.

As a whole the stations are in good condition and well cared for.

(Northern R. R.)

With two or three exceptions the stations on this line, although many of them are old, were found to be in good conditon. At Grafton Centre and West Canaan the privies had been neglected. At the former the waiting-rooms were also neglected and dirty. At West Lebanon the sanitary conditions were bad, and the waste water from the sink in men's room emptied upon the ground beneath the floor of the station. This should be changed for sanitary reasons as well as for the protection of the building.

WHITE MOUNTAIN DIVISION.

(B. C. & M. R. R.)

A somewhat detailed report on the sanitary condition of the stations on this line was made in our last report. There is little to be added, except that constant improvements have been made by the Boston & Lowell management. At the Fabyan considerable money was expended in improving the healthfulness of the Fabyan House and the "Cottage." Closets have been put in at the station, a much needed improvement. At Lancaster better drainage should be provided for the station.

The Laconia station is wholly inadequate to the wants of the place, and the sanitary condition is bad much of the time. In this connection it is but just to the Boston & Lowell Railroad to remark that plans for a new station have been made, but owing to the uncertainty of the court's decision respecting the leasing of this line, the company has not yet commenced building it.

In the above report defects have been pointed out, while little has been said of improvements. In general the sanitary condition of the stations and grounds of the various lines in our State, managed by the Boston & Lowell Railroad, is excellent, and the care and attention given this particular subject are commendable in the highest degree.

BOSTON & MAINE RAILROAD.

This road controls most of the lines in the eastern part of the State, and has done much to put them in a first-class condition. In our last report we commended the policy of the road in doing so much to beautify and make healthful the stations and grounds, and are pleased that the system of rewarding those agents who keep their stations and grounds in the best condition is still continued. Too much cannot be said in commendation of such a system, and the result is most excellent.

In a report of our inspections for 1885, out of fifty stations, not including those upon the Worcester, Nashua & Rochester Railroad, only four were classed as "bad," regarding sanitary conditions. These were Newmarket Junction, Durham, Great Falls, and Rochester. Since then new stations have been built at both Great Falls and Rochester which are all that could be desired for the localities.

The condition of the station at Newmarket Junction, the responsibility for which is divided with the Concord Railroad, remains the same, and against this station we are obliged to place the classification, "decidedly bad." Improvements have been made at other points, and the general condition of the road and its leased lines is better than ever before.

The stations upon the Worcester, Nashua & Rochester Railroad, now controlled by the Boston & Maine, are models of neatness and convenience. They are better than those upon any other line in the State, so far as sanitary conditions are concerned, and this has been attained at an expense not exceeding two hundred and fifty dollars a station.

Outside of the improvements that have been made at the different stations, considerable money has been expended by the Boston & Maine management at Alton Bay camp-ground, the larger portion of which is owned by this corporation. Several large latrines have been built upon the grounds, and two lines of sewers constructed which carry the waste from the grounds. This improvement has long been needed, and it has already done much to relieve some of the sanitary difficulties that existed upon these grounds. The sewers and latrines were completed early in the season, and have had the test of one season's use. They have been found to be satisfactory.

No railroad corporation in the State is doing more for the sanitary improvement of its stations and grounds than the Boston & Maine.

CONCORD RAILROAD AND BRANCHES.

The inspection of the Concord Railroad shows that most of the stations are in excellent sanitary condition. Quite a full report of the stations upon this line was made in the last annual report of the Board. The last inspection shows improvements in some of the stations during the year. The Manchester station has been improved to quite a marked extent, but the sanitary conditions are not yet what they should be. The sewer beneath the station should be discontinued and connection made directly with the sewer in the street. Changes are now contemplated, which, if carried out, will remedy the sanitary defects that now exist there.

The other stations upon the line are well provided for and were found to be in good condition. The station at Concord is a model in respect to its sanitary appointments, and too much cannot be said in its praise.

Upon the Manchester & North Weare Railroad several improvements have been made. A new station was built at Parker's last year, and a new one is also to be built at Goffstown Centre. The stations upon this line will then be in first-class condition. Within a few years two of the stations upon this line have been rebuilt, and, although comparatively inexpensive, are ample and attractive.

Upon the Manchester & Lawrence Railroad most of the stations are all that is required, from a sanitary standpoint. In one instance the station agent had neglected to keep his station in good order. The entire premises were filthy and dirty, and a request was made to have the station placed in a better condition.

A new station was built during the year at Canobie Lake, consisting of one waiting-room, office, and freight room, with proper sanitary appointments.

The water supply at Windham Junction is unfit for drinking purposes. The agent, however, furnishes a pailful of ice water daily.

On the Concord & Portsmouth line most of the stations are in excellent condition. That at Newmarket Junction is an exception, however, and remains in the condition described in our last annual report. The responsibility is equally divided between the Concord and the Boston & Maine railroads. Better sanitary provisions are needed at once. During the summer months the station is, as a rule, in a bad condition.

A general review of all the stations upon the Concord road and its branches shows that some improvements have been made during the year, and that as a whole the stations are ample and provided with all necessary conveniences. It is fair to assume that, under the policy adopted by the management, the existing defects will eventually be remedied.

MILK FROM A SANITARY STANDPOINT.*

The question of providing the people with a pure milk supply is one that is to-day receiving much attention from sanitarians and other scientific investigators. The subject has extended far beyond the consideration of fraudulently placing a watered or otherwise inferior milk upon the market by a few unscrupulous venders, and has become a scientific question with which the interests of the producer are inseparably connected.

The dairyman who would excel in quantity and quality of milk produced must apply, at least, all that science reveals regarding the subject, even if he does not understand or study the facts that lead to the revelation. It is not to be expected that all dairymen will become scientists, but they can, if they will, accept the results of investigations and apply them with great advantage.

The researches made within a few years into the cause and nature of certain diseases, demonstrating, as it has, very much that before was unknown in the processes of organic life, have in no other department of food production contributed so much of

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Abstract of paper read before the New Hampshire Dairymen's Association, January 11, 1887.

importance as upon the subject of milk supply. The absolute demonstration of the germ theory of disease, and the comprehensive knowledge of various other micro-organisms that take part in or induce many of the phenomena that take place in the organic changes and operations incident to animal and vegetable life, have shown us that no other product is so susceptible to infection and contamination as milk.

The word "contamination" is used in this connection as implying any alteration induced by organic changes or from extraneous causes. Milk, as every producer knows, possesses remarkable absorbent qualities, while, owing to its nutritive properties, it is especially adapted to the development of almost every kind of micro-organism that may accidentally be brought in contact with it. Indeed, it may be said to be a natural media for certain organisms low in the scale of life, and so readily is it acted upon that its original character is always lost in a few hours, unless protected by a low temperature or some other artificial means.

The influences that affect the quality of milk may be stated in a general way as follows:

1. Breed and age.
2. Season and its attendant changes.
3. Feed and water supply.
4. Ventilation and general care of stable.
5. Drainage and other sanitary supervision.

Without a proper consideration of these items a perfectly healthful milk is not assured. It is true that chemistry will show whether milk from a given dairy contains the thirteen parts per hundred of solids as required by law, but it is wholly inadequate to determine if it contains an infectious or noxious principle that may have been introduced in a variety of ways without affecting the legal standard.

The law simply guarantees to the public that the milk which they purchase shall contain a certain amount of solids. It does not specify any other quality than that demonstrated by chemical examination.

Every producer of milk knows that there are certain articles of feed and other conditions which may affect the taste, purity, and keeping qualities of the milk which an analysis will not show. An inspection made in 1884, in Massachusetts, showed that a herd of cows kept in the following conditions produced milk of the legal standard:

1. Herd of cattle largely selected from condemned animals at extremely low prices.
2. Overcrowding.
3. Filthy stables and filthy surroundings.
4. An extremely impoverished diet, malt (brewers' grains and sprouts), tomato skins, small quantities of salt hay, and bale hay and meal.
5. Filthy water pumped from a well driven through a pool of liquid manure under the stable.

Notwithstanding, the milk produced by this herd fulfilled all the requirements of the law. No one who has any knowledge of the production of milk will for a moment believe that the milk obtained from this herd was of such quality as would be produced by a herd of well-kept cattle. Milk produced under such conditions would be utterly unfit for small children dependent upon it for sustenance, even if it were innoxious to persons in adult life.

The question of breed, age, season, and food, in their relation to the production of milk, has been too often and too extensively considered to be here discussed, so far as quantity and quality with reference to the legal standard are concerned. In regard to feed, however, water supply, ventilation, drainage, and sanitary supervision, there is much which undoubtedly has not been fully, if at all, considered by the dairyman.

Prof. Girard, director of the Paris Municipal Laboratory, in a paper upon the "Feed of Milch Cows," published in the "Revue d'Hygiène," says in a summary of his conclusions:

"1. The udder cannot be considered as a filter so perfect in its nature that water charged with poisonous ingredients becomes harmless and healthful in its passage through it.

"2. Every substance which contains a noxious element, germ, microbe, or poison, capable of mingling with the blood, should be absolutely removed from the feed; since the milk is derived directly from the blood, everything which passes into the latter may also reappear in the milk."

Good ventilation is as essential to the welfare of animals as of man. So important is this matter regarded in some localities that the amount of air-space per cow has been fixed by regulation. The Metropolitan Board of Works, of London, in regulations for cow-sheds, fixed the air-space at 800 cubic feet per cow. The Dairymen's Association petitioned to have the amount reduced to 600 cubic feet, chiefly on account of the low temperature which followed the carrying out of the regulations, by reason of increased space per cow.

Dr. Parkes, of England, who is recognized as one of the ablest sanitary authorities in the world, states that each cow in every milk-stable should have at least 1,000 cubic feet of air-space. He further says that in cow-houses disease and death are in direct proportion to foul and pure air.

In the city of Brooklyn, N. Y., regulations require 1,000 cubic feet of air-space to each cow. This subject and that of general cleanliness in and about the stables are under municipal regulation and inspection in many places.

The health commissioner of Milwaukee in 1880 caused a thorough inspection of the stables in his jurisdiction to be made, and the result showed that in a very large majority of cases no attention whatever was paid to sanitary requirements. In many stables the condition was absolutely filthy; a large number were wholly unventilated; in others there was great overcrowding, and in some very little light. In many stables the atmosphere was loaded with putrescent vapors; liquids ran through the floor, saturating the earth beneath, which of course produced a putrefactive fermentation which constantly generated poisonous gases. In other places the general uncleanliness of utensils used in carrying on the milk business was noticeable. While conditions varying from those classed as "unexceptionably good" to "absolutely repulsive" were described in the report, the latter largely predominated in numbers. Out of 1,871 only 713 were classed as "unexceptionably good," while the remaining 1,158 were classified in varying degrees down to "absolutely repulsive."

These facts are given for the purpose of showing the sanitary neglect which exists even with the knowledge that is accessible upon the subject. It is quite possible that the conditions just described do not apply to the dairy stables of New Hampshire; but it is true that they do exist in too many instances among the smaller producers of milk.

Dr. Abbott, secretary of the State Board of Health of Massachusetts, who has given much attention to the subject, says that a radical change is needed in a great number of cow-stables throughout the State, not only as to feed, but in the matter of ventilation, of lighting, of overcrowding and air-space, cleanliness, water supply, and drainage.

So well is the fact known that certain articles of feed affect the milk that most producers are now careful in its selection; but many of them, and perhaps a majority, entirely ignore the subject of water supply. Dairymen who are careful to exclude decaying vegetable and other kinds of tainted feed allow their cows to drink water that is loaded with organic impurities. In some instances the water supply is from a well situated in a convenient locality, frequently in the barnyard or under the barn, where it must, from the very nature of its surroundings, be badly polluted. It is not improbable that from this cause alone an inferior milk and butter are often produced. To what degree the impurities taken into the circulation from polluted water are eliminated through the milk, is a question worthy of consideration.

Investigation shows that polluted water is a most prolific source of disease in the human family, especially of typhoid fever, and it is reasonable to suppose that water unsuitable for domestic purposes is also unfit for consumption by animals. The recent examination of a large number of wells in different sections of the State confirms the belief that a well of pure water is the exception, and that a majority of the wells are polluted with some form of organic matter. Every one knows that a well is a hole in the ground, constructed in a certain manner, and deep enough to reach water; but they have not considered the fact that it drains a certain area of soil represented by an inverted cone, the apex of which is the bottom of the well and the base the surface of the ground above. The distance across the base is usually regarded as twice the depth of the well, although under certain conditions of the soil it may be much greater. So greatly does this rule vary that it is an unsafe one to follow. It is evident, therefore, that waste products deposited upon the soil drained by the well will, in the course of time, leach through the earth and contaminate the water. The process goes on so slowly that the organic matter that reaches the well often loses both taste and smell and is not recognized. In several instances in this State eighty grains of organic matter to the gallon have been found, while the normal amount should not exceed four grains; and yet the contamination could not be recognized by sight, taste, or smell. The wells at hundreds of our country homes are located in the most favorable positions to become polluted. Around them in close proximity are sink-drains, family vaults, hog-pens, stables, barnyards, and refuse matters of various kinds. The products of the dangerous environments gradually filter through the soil and load the water with tasteless, and odorless, and sightless poisons.

In answer to some questions submitted to the physicians of New Hampshire last year relative to typhoid fever, out of one hundred and twenty-nine who had treated the disease fifty-three, or forty per cent, reported water pollution to be the cause. Water is a great solvent of organic, and, to a certain extent, inorganic matters. The falling rain takes up impurities into the air and imbibes to a great degree the soluble products that it comes in contact with upon the surface and in the soil.

Upon the soil in the immediate vicinity of dwellings not connected with a sewer a large amount of waste matter is necessarily deposited, aggregating many tons annually at a single dwelling. A great part of this product is fluid, chiefly sink-water, and what does not evaporate or run off is received into the soil. For a short time, on new and clean lands, such products are taken up and oxidized or otherwise changed; but by and by the soil becomes supersaturated and loaded with impurities. Now a well situated in the immediate vicinity of such conditions, as hundreds in this and other States are, must from the very nature of things become contaminated. The degree may be little or much according to circumstances.

The falling rain and water from melting snow leach through the filth-saturated soil and reach the well. The top of the well may be covered with a painted plank platform into which is set a pump of the most approved pattern; the ground immediately surrounding it may be of clean gravel or beautifully grassed, so that the external appearance is pleasing to the eye and suggestive of unscrupulous cleanliness; but beneath this fair exterior little channels and water-courses may be carrying to the well, slowly but surely, the bitter seeds of sickness and death. Wells of this character become cesspools, out of which we continue to drink daily because we do not smell, taste, or see the infectious principle that is held in solution in the water.

It is not only self-evident to any one who has carefully considered the subject of polluted water, but is also proven by experience, that water from such sources should not be used for supplying the dairy stable, or in washing or cleansing utensils in which milk is kept. The custom which is in vogue among some producers, of washing butter in water, should be looked upon with suspicion whenever the water supply is from a well that may possibly be polluted. Milk has oftentimes been the medium through which diseases have been transmitted, especially typhoid fever, diphtheria, and scarlet fever. In cases of typhoid fever transmitted by milk, the intervention of infected water has always been proven. In diphtheria and scarlet fever the germs of the diseases seem to have been absorbed by the milk directly from an infected atmosphere. The epidemic of typhoid fever at St. Pancras, England, a few years ago, was proven to have been caused by infected milk. The investigation was most thorough and the facts obtained conclusive. The vault into which were thrown the dejections of a typhoid fever patient was not over twenty feet from the well. The milk cans, pails, and all the dairy utensils were washed in water from this well. There were 431 cases in 276 houses; all but 63 of the 431 cases received the infected milk, and it was probable that all received the disease from the same source.

At Port Jarvis, N. Y., an outbreak of typhoid fever was traced to a dairy farm where all the utensils of the dairy were washed with water contaminated by a cesspool. In nearly every family using the milk there were one or more cases of the fever. The physicians believed that the germ of the disease was contained in the water used to wash the cans, pails, etc. A few years ago at Aberdeen, Scotland, typhoid fever broke out simultaneously in nine families. Investigation showed that these nine families obtained their milk from one small dealer at whose place the disease existed.

In 1876 an epidemic of typhoid fever occurred at Eagley, England, which was traced directly to the milk supply. Fifty-seven families were supplied by one dealer, and out of this number fifty-five contracted typhoid fever. It was shown that the milk cans were washed in water poisoned by the dejections of a typhoid fever patient. However, it was denied that the milk was watered. In a report of the epidemic the health officer states that " not one household to which the milk was traced did I find entirely free from the disease."

In 1880 an epidemic of thirty-two cases of typhoid fever occurred from infected milk in Southport, England. The milk cans were washed daily with water from a well that was infected with typhoid fever germs. The cause of the epidemic was discovered and its extension curtailed by stopping the sale of the milk.

In a recent number of the " Sanitary Engineer," the remark is made that there is little doubt that we have in this country, and especially in our large cities, typhoid fever from milk contamination ; but it has not been well established. The reason for this is that our investigations are not so thorough as the English, and when we fail to find the disease in infected water our researches cease.

It is believed that diphtheria and scarlet fever have been repeatedly conveyed to individuals through infected milk, and that the germ of the disease was absorbed by the milk directly from the atmosphere. Several instances are on record. An epidemic of scarlet fever in London, a few years ago, was traced directly to the milk supply. The disease was confined to the exact district of one milkman, and so marked were the lines that the inhabitants upon one side of the street, who were supplied from another source, did not have the disease, while upon the opposite side every house was infected.

More care is needed in the storage of milk than is generally thought necessary, and this, especially, where there is illness of any kind in the family of the dairyman. In such instances the emanations to which the milk is exposed are of a diseased and dangerous character, and subjected to such influences it is impossible for the milk to retain its normal purity. There is an abundance of evidence on record to show that disease germs have been in this way absorbed by the milk and transmitted to persons.

Dr. McDougal, in an address before the Philosophic Society of Glasgow, on the subject of milk as a vehicle of infection, said that it is "a congenial soil for the preservation, and probably even the multiplication, of specific infection."

Dr. Sternberg, the distinguished American biologist, says that milk would be a suitable culture fluid for the experimental reproduction of disease germs in the laboratory, if it were not so readily infected by other germs which float in the atmosphere, thus showing how readily it is contaminated by various organisms.

Dr. Vatcher, a celebrated English authority, in writing upon the transmission of disease by milk, states that it may be transmitted as follows :

1. It may be derived from a cow suffering from a specific epizoötic disease.

2. It may be derived from a tuberculous cow.

3. It may be drawn from an inflamed udder.

4. It may have undergone chemical or fermentative changes.

5. It may have become infected with the contagium of a human disease.

Under the classification of epizoötic diseases likely to occur in cattle, he mentions pleuro-pneumonia, splenic fever, and foot and mouth disease. It is quite likely that the danger of milk becoming infected by reason of the acute diseases just mentioned is not so great as might be expected, from the fact that the milk secretion is usually rapidly arrested after an attack.

Whether or not pleuro-pneumonia germs are secreted by the milk is not certain, so far as my information goes ; but since the germs of this disease exist in the blood in great numbers, it is not unreasonable to suppose that some of them might be secreted in the milk.

Splenic fever is communicable to man and is nearly always fatal if the infection is internal; external infection by a scratch or similar introduction of the virus produces malignant pustule which is often fatal. The milk and butter of animals affected with this disease possess virulent properties, according to Heusinger and other observers.*

The foot and mouth disease always exercises a marked influence upon the character of milk. It contains not only the germ organisms of the disease but frequently we have pus and even blood. From such milk the disease has often been communicated to the human subject. Its communicability was discovered by Sagar as long ago as 1764, in Moravia, who observed the disease in human beings who had drank the milk of cows suffering from the foot and mouth disease. Similar observations were made by Brosche in 1820, in the instance of some young girls who had contracted the disease from milk. Still later, in 1827, in Bohemia, where the disease was prevailing extensively among the cattle, young people were attacked with an inflammatory lung fever accompanied by an aphthous eruption in the mouth or an exanthema resembling that of small-pox, and also by abscesses and ulcers upon the lower extremities. Schneider reported entire families who were made ill by the use of butter and cheese made from the milk of cows affected with this disease.†

A few years ago the disease appeared in a dairy at Brighton, Mass. The milk of the infected cow, together with that of thirteen others, was sold to the consumers during a period of two or three days, when the disease was discovered by the proprietor, who immediately and very justly notified his patrons of the trouble. In one of the families supplied the disease broke out in the course of a few days in three individuals, all adults. The symptoms consisted of "loss of appetite, nausea, slight acceleration of pulse, swelling of tonsils and sub-maxillary glands, the appearance of a few vesicles upon the lips and tongue, and a singular cutaneous eruption on the lower extremities, consisting of clusters of papules, vesicles, pustules, and ulcers of different sizes." ‡ Another case was found in a woman in another locality and traceable to the same cause. There is upon record a great abundance of evidence showing the facility with which this disease is communicated through the media of infected milk, butter, and cheese.

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* Ziemssen, Vol. III. p. 408. † l. c. p. 521.

‡ Report Massachusetts State Board of Health, 1871.

Tuberculosis, or consumption, is a disease not uncommon among cows. The experiments of Klebs, Gerlach, Orth, and several other equally able investigators* in feeding tuberculous milk to animals certainly go to prove that it may be communicated to them, and it is believed that it has often been communicated to young children in the same manner. Prof. D. E. Salmon, D. V. S., of the Bureau of Animal Industries in this country, believes that tuberculous milk is an exceedingly prolific source of consumption in the human family. From the direct experiments of tuberculous milk made upon the lower animals, we have the strongest evidence that infection of the human subject, especially children, might readily follow the use of such milk. The identity of tuberculosis in animals to consumption in man has been fully established. The germ, or bacillus, is morphologically the same and there is no distinction in the pathological lesions. It is also positively asserted that there are clinical observations proving the transmission of tuberculosis from animals to man through the use of tuberculous milk. In the report of the Bureau of Animal Industries for 1884 it is stated that certain herds were supplying New York city with milk containing twenty, thirty, and even fifty per cent of animals affected with the disease. In some districts of New York can be shown large herds with 90 per cent the subjects of tuberculosis, and in this connection it is asserted that 29 per cent of the adult males dying in New York city are tuberculous. The same report says: "Turning to milk, it cannot be denied that boiling would give the required guarantee of safety; but in the *milk-cure* establishments and where this liquid is produced for infants, it is sought fresh and used without boiling, and yet these places seek for the heaviest milkers, and often secure tuberculous cows. For these, and indeed for all dairies, there should be a state control of the milch animals and their products. In the present state of public opinion it may be possible to apply measures that will be really effective in preventing the sale and use of tuberculous meat and milk, yet, where already applied, the preventive measures have proved so beneficial that we must advocate their maintenance and extension."

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* Public Health, Vol. VIII. p. 169.

In this connection it should be impressed upon the minds of the people that tuberculosis is the most fatal malady known to mankind. The number of deaths occurring in New Hampshire annually from this disease, directly and indirectly, exceeds one thousand ; between eight hundred and nine hundred are directly charged to it, being twice as many as from any other disease.

In incurable disease, like cancer for instance, it is not unreasonable to suppose that the milk must be diseased. Cancer is very frequently found in milch cows, and cases are on record where milk has been sold from animals suffering with the disease in an advanced stage. A case was discovered in one of the towns in this State in which the cow was suffering from two large cancers, one on each side of the face. The animal had been kept for four years in a dark and filthy cellar out of sight, the milk meanwhile being sold daily to customers who supposed they were getting an excellent quality. Whether cancer cells are eliminated in the milk is not known, to my knowledge, but it is certain that normal milk cannot be produced from a diseased cow, and a man who would sell milk under these circumstances deserves to be compelled to use the product as his sole diet.

Milk from a "gargety" cow should be rigidly excluded from domestic use, as it contains bloody serum, pus, and other fetid animal products which at once condemn it. The condition termed "gargety" is simply an inflammation of the udder and is not a specific disease, yet every milkman should be careful to exclude such milk, for it has been known to produce indigestion and even toxic effects in the individual using it.

Very much might be added to that already cited to show how readily milk becomes infected under a great variety of circumstances and causes, but this would seem to be sufficient to illustrate the points in view. A knowledge of the various evils suggests, in a great measure, the methods necessary to avoid them.

It is necessary that no detail should be overlooked in the care of milk from a sanitary standpoint. The milk should be drawn in as cleanly a way as possible, and even then, except in perfectly sound animals, there is danger that the milk may contain some germs of disease. From the healthy cow there is received into the milk-pail, under the best conditions, some foreign matters like hair, epithelium cells, and other animal debris.

It is perhaps unnecessary to remark that milk should be immediately strained through a very fine sieve or cloth strainer and removed from the stable to a place not exposed to odors or an impure atmosphere. The great avidity with which milk absorbs any taint renders this a matter of the greatest importance, as well as that all vessels into which it is put should be *absolutely* clean. In some parts of Switzerland, it is said, milk is strained with excellent results through sprigs of well-washed fir-tops placed in a funnel, and the milk filters through as fast as milked from the cow, thus arresting at once hair, skin, clots, epithelium, and other matters.

It is not to be presumed for a moment that the unsanitary conditions mentioned apply to a majority of the dairy farms in this or any other State ; but it is true that a total neglect of good sanitary conditions exists to such an extent as to give force to all that has been said, and the odium which a single bad dairy stable casts upon the entire industry is not to be overcome by the fact that most dairies are suitably cared for.

The remedy for these defects must be applied largely through suitable laws and their impartial enforcement, in instances where a knowledge of the subject is not sufficient to insure proper care in the production and sale of milk. Pure milk can be assured in two ways : First, through the conscientious endeavors of the dairyman, through proper feed, care, and sanitary management ; second, by compulsory laws which shall secure these conditions through the executive work of a qualified inspector whose duty it shall be to examine the dairy stables and all conditions connected therewith pertaining to the subject of milk production.

SANITARY SURVEY OF SCHOOLHOUSES.

A sanitary survey of the schoolhouses of New Hampshire was commenced by the State Board of Health about two years ago. A blank book containing fifty questions was prepared and sent directly to the teachers. In addition to the questions a sketch of the ground plan of the house was asked for, and a page divided into squares was appended in order that the teacher might be able to draw the plan readily to any given scale.

The questions embraced all the important points connected with schoolhouse sanitation. The size of the schoolhouse, also the size of the different rooms, was obtained by actual measurement, and by a comparison of these in the report their accuracy was in a measure proven. Reports were received from one thousand two hundred and twenty-eight schoolhouses, and the chief facts obtained are contained in the tables below. Blanks with apparent errors were returned for correction. The amount of cubic space in many of the rooms is actually less than that given in the table, since the entry is often built into the schoolroom, and in computing the cubic space this was not deducted. The teacher is not included in the "average attendance," which would have reduced the amount of air-space per pupil below the figures given in the table. Therefore the schoolhouses are represented to be in a somewhat better condition than actually exists. In the tables herewith given, all fractions are dropped, and the nearest whole number substituted. It is believed that the reports represent an average of the schoolhouses of the State, exclusive of the cities. That some errors exist there is no doubt, but they cannot be sufficient to vary the aggregate results to any extent, or change the deductions which must be drawn from an examination of the tables.

The object in presenting these facts is to call the attention of school authorities to the faults that exist in our schoolhouse architecture, and to secure legislation that will make it obligatory upon boards of education to construct all schoolhouses in the future upon some approved sanitary plan.

TABLE NO. I.

SHOWING SEATING CAPACITY AND AVERAGE ATTENDANCE.

	Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 60.	Over 60.	Total number of schools.	Total seating capacity.	Total av'ge attendance.
ROCKINGHAM COUNTY.															
Seating capacity in .			1	7	26	6	28	15	26	18	29	19	175	7,103	
Average attendance in	6	25	32	25	22	15	14	13	7	4	9	3	175		3,939
STRAFFORD COUNTY.															
Seating capacity in .				8	10	9	17	6	18	16	13	9	106	5,196	
Average attendance in	4	13	25	10	7	9	10	12	6	5	2	3	106		3,471
BELKNAP COUNTY.															
Seating capacity in .			1	4	12	5	27	6	11	4	10	4	84	2,988	
Average attendance in	2	21	22	13	4	5	1	5	6	3	2		84		1,545
CARROLL COUNTY.															
Seating capacity in .			1	6	16	8	20	5	6	2	7	8	79	2,741	
Average attendance in	2	15	22	15	12	5	2	2	1	1	2		79		1,316
MERRIMACK COUNTY.															
Seating capacity in .		1	3	21	52	14	38	10	28	5	8	8	188	5,903	
Average attendance in	16	61	51	22	18	4	9	4	3				188		2,484
HILLSBORO' COUNTY.															
Seating capacity in .			3	15	30	19	31	13	18	26	12	5	172	5,860	
Average attendance in	10	38	45	19	11	12	11	7	10	6	3		172		3,163
CHESHIRE COUNTY.															
Seating capacity in .		1	5	9	27	10	22	9	20	15	15	11	144	5,149	
Average attendance in	12	34	26	17	14	9	8	5	7	8	3	1	144		2,719
SULLIVAN COUNTY.															
Seating capacity in .		1	5	18	21	7	18	5	14	3	3	4	99	2,950	
Average attendance in	2	39	28	8	7	5	6	3	1				99		1,371
GRAFTON COUNTY.															
Seating capacity in .		1	5	19	32	5	25	8	13	1	2	3	114	3,205	
Average attendance in	8	35	27	20	8	8	3	1	1	1	2		114		1,606
COÖS COUNTY.															
Seating capacity in .			2	10	14	7	10	3	6	1	7	7	67	2,241	
Average attendance in		13	17	14	5	3	4	5	1	1	4		67		1,343
Total No. schoolrooms													1,228		

TABLE NO. 2.

RELATING TO SEATING CAPACITY AND AVERAGE ATTENDANCE.

COUNTIES.		
ROCKINGHAM	Per cent of average attendance to seating capacity	55
	Number of schools in which average attendance exceeds seating capacity	7
	Average seating capacity	40
	Average attendance for all the schools	22
STRAFFORD	Per cent of average attendance to seating capacity	66
	Number of schools in which average attendance exceeds seating capacity	..
	Average seating capacity	49
	Average attendance for all the schools	32
BELKNAP	Per cent of average attendance to seating capacity	51
	Number of schools in which average attendance exceeds seating capacity	1
	Average seating capacity	35
	Average attendance for all the schools	18
CARROLL	Per cent of average attendance to seating capacity	48
	Number of schools in which average attendance exceeds seating capacity	..
	Average seating capacity	34
	Average attendance for all the schools	16
MERRIMACK	Per cent of average attendance to seating capacity	42
	Number of schools in which average attendance exceeds seating capacity	1
	Average seating capacity	30
	Average attendance for all the schools	13
HILLSBOROUGH	Per cent of average attendance to seating capacity	53
	Number of schools in which average attendance exceeds seating capacity	1
	Average seating capacity	34
	Average attendance for all the schools	18
CHESHIRE	Per cent of average attendance to seating capacity	52
	Number of schools in which average attendance exceeds seating capacity	1
	Average seating capacity	34
	Average attendance for all the schools	18
SULLIVAN	Per cent of average attendance to seating capacity	46
	Number of schools in which average attendance exceeds seating capacity	1
	Average seating capacity	29
	Average attendance for all the schools	14

TABLE NO. 2. — *Continued.*

COUNTIES.		
GRAFTON	Per cent of average attendance to seating capacity	50
	Number of schools in which average attendance exceeds seating capacity	3
	Average seating capacity	28
	Average attendance for all the schools	14
COÖS	Per cent of average attendance to seating capacity	59
	Number of schools in which average attendance exceeds seating capacity	4
	Average seating capacity	33
	Average attendance for all the schools	20

Some interesting facts are brought out in the above tables. It will be seen that, as a rule, the schools are not overcrowded in respect to the actual attendance; but a careful examination of the individual reports on file in the office of this Board, shows that the subject of space per scholar was not considered at all in the construction of a majority of the schoolhouses reported upon. This fact is also made evident upon the examination of Tables Nos. 3 and 4. Table No. 2 shows that in nineteen schoolrooms the average daily attendance exceeded the seating capacity. These schools must be regarded as very much overcrowded, and even if the average daily attendance of many of the schoolrooms only equaled or nearly equaled the seating capacity they would still be overcrowded. If the entire seating capacity of these rooms were occupied, a state of overcrowding would exist that must be attended with great danger to all, and serious results to many, because there are too many seats for the cubic capacity of the room.

TABLE NO. 3.

SHOWING AMOUNT OF AIR IN CUBIC FEET TO EACH SEAT AND ATTENDANT.

	Under 50.	50 to 100.	100 to 150.	150 to 200.	200 to 250.	250 to 300.	300 to 350.	350 to 400.	400 to 450.	450 to 500.	Over 500.
ROCKINGHAM COUNTY.											
Cubic feet of air to each seat in .		13	60	59	26	10	3	3		1	1
Cubic feet of air to each attendant in		1	7	23	22	29	23	15	6	7	37
STRAFFORD COUNTY.											
Cubic feet of air to each seat in . .	1	8	25	29	22	6	5	2	5		1
Cubic feet of air to each attendant in		3	3	4	14	13	18	13	7	5	23
BELKNAP COUNTY.											
Cubic feet of air to each seat in . .		7	28	34	10	1					1
Cubic feet of air to each attendant in			3	9	13	10	9	4	8	7	19
CARROLL COUNTY.											
Cubic feet of air to each seat in . .		17	32	15	6	3	2				
Cubic feet of air to each attendant in			5	11	13	7	9	3	5	6	13
MERRIMACK COUNTY.											
Cubic feet of air to each seat in . .	1	19	69	59	19	10	5	1			2
Cubic feet of air to each attendant in	1		4	10	14	22	20	16	20	13	61
HILLSBOROUGH COUNTY.											
Cubic feet of air to each seat in . .		10	59	46	23	35	2	6			1
Cubic feet of air to each attendant in			2	10	17	35	13	18	15	6	51
CHESHIRE COUNTY.											
Cubic feet of air to each seat in . .		5	43	45	18	23	5	3			1
Cubic feet of air to each attendant in			3	8	14	17	15	16	11	11	45
SULLIVAN COUNTY.											
Cubic feet of air to each seat in . .	1	12	34	30	12	4	2	3			
Cubic feet of air to each attendant in		3	8	7	7	10	7	10	6	9	31
GRAFTON COUNTY.											
Cubic feet of air to each seat in . .		10	45	41	15	4	1	1	1	1	1
Cubic feet of air to each attendant in		1	3	11	16	19	9	8	13	3	25
COÖS COUNTY.											
Cubic feet of air to each seat in . .	1	5	41	19	3	1	1		1		
Cubic feet of air to each attendant in		4	1	14	16	7	7	9	4	2	4

TABLE NO. 4.

SHOWING AVERAGE CUBIC FEET OF AIR TO EACH SEAT AND ATTENDANT, BY COUNTIES.

COUNTIES.		
ROCKINGHAM	Average cubic feet of air to each seat	176
	Average cubic feet of air to each attendant	400
STRAFFORD	Average cubic feet of air to each seat	196
	Average cubic feet of air to each attendant	303
BELKNAP	Average cubic feet of air to each seat	158
	Average cubic feet of air to each attendant	435
CARROLL	Average cubic feet of air to each seat	141
	Average cubic feet of air to each attendant	376
MERRIMACK	Average cubic feet of air to each seat	168
	Average cubic feet of air to each attendant	490
HILLSBOROUGH	Average cubic feet of air to each seat	244
	Average cubic feet of air to each attendant	443
CHESHIRE	Average cubic feet of air to each seat	175
	Average cubic feet of air to each attendant	567
SULLIVAN	Average cubic feet of air to each seat	166
	Average cubic feet of air to each attendant	505
GRAFTON	Average cubic feet of air to each seat	165
	Average cubic feet of air to each attendant	409
COÖS	Average cubic feet of air to each seat	149
	Average cubic feet of air to each attendant	280

Tables No. 3 and 4 conclusively prove that our schoolhouses were constructed without any reference to the amount of air-space which science and experience have proved necessary for the welfare of the pupil. While authorities differ somewhat as to the amount of cubic air-space per pupil required in a schoolroom, the minimum figures given by standard authorities are greater than those found in the above tables. The tables show that the average cubic air-space per seat, for all the schools reported upon, is 173.8 feet.

In the regulations which govern the construction of schoolhouses in the Province of Ontario, it is provided that "in each room the area should be at least twelve square feet on the floor, and there should be at least two hundred and fifty cubic feet of air-space for each pupil." In reference to this regulation the minister of education said that he had placed the figures at the lowest possible point consistent with safety to the health of the pupils in the schools.

Mr. W. R. Briggs, the architect of the Bridgeport schoolhouse, of Connecticut, allowed two hundred and sixty-six cubic feet in corner rooms designed for fifty scholars; in the middle rooms, two hundred and seventy-three cubic feet; and in the large room, sufficient for two hundred pupils, four hundred and forty-seven cubic feet per seat. Prof. Kedzie, of Michigan, believes that three hundred cubic feet per seat should be allowed. Dr. Lincoln, of Boston, an eminent authority upon this subject, recommends at least two hundred and fifty cubic feet per head.

From these figures it will be seen that the space per seat in these schoolrooms is much too small. The amount differs in different counties, the nearest approximate to correctness being in Hillsborough county, averaging two hundred and forty-four cubic feet per seat; and the lowest in Carroll county, one hundred and forty-one cubic feet per seat. The figures given as allowable by the best authorities, as stated above, are based upon the supposition that with this amount of space suitable provisions for ventilating the rooms are to be maintained. In our schoolhouses included in this table nothing of the kind exists, so the amount of cubic space is of very little consequence since any practicable allowance of air would soon become vitiated and unfit for respiration without ventilation.

In the report upon the schoolrooms of Ontario the committee on school hygiene expressed it as their opinion that five hundred cubic feet of air-space per pupil was sufficient with *six renewals of fresh air per hour.* If the cubic space were to be reduced below these figures, more frequent renewals of fresh air would be necessary. Applied to the construction of our schoolhouses the defect is an exceedingly dangerous one, but in practice it is not quite so bad, since most of the rooms are not filled to their full seating capacity. The cubic air-space per scholar for the State, based upon the average attendance, is four hundred and twenty cubic feet, the largest average amount per scholar being in Cheshire county, five hundred and sixty-seven cubic feet; and the smallest, two hundred and eighty cubic feet, in Coös county. This average is of importance, however, only in showing that the cubic space per scholar is ample, *with ventilation*, in some of our schools, while in others overcrowding would still exist with the most perfect methods of ventilation, if all the seats were occupied. The favorable circumstances, wherever found, are the result of existing circumstances rather than design, those circumstances being a very limited number of scholars in the given district. This table proves that our schoolhouses are not properly constructed, independent of the question of lighting and ventilation. Almost without exception, too many seats are placed in the schoolrooms.

Table No. 5 shows the time the average attendance would render the air unfit for respiration in 858 individual schools. These 858 schools, or sixty-nine per cent of the total number reported, are without any means of ventilation other than windows and doors which cannot be utilized to any extent in cold weather.

It is conceded that in schools composed of children of varying ages, at least 1,800 cubic feet of fresh air per hour are required for each pupil. Many authorities place the figures much higher. Thirty cubic feet of fresh air per scholar is required each minute in order that the carbonic acid gas thrown off by the lungs shall not accumulate to an extent of more than six parts per 10,000, and to purify and destroy other organic matters eliminated by the lungs.

A German medical commission, in a report upon schoolhouse construction, places the minimum amount of fresh air for each pupil at 2,120 cubic feet per hour. The difference between these figures as given by the best authorities and no ventilation whatever, must lead every thoughtful person to believe that our

TABLE NO. 5.

GIVING THE NUMBER OF UNVENTILATED SCHOOLHOUSES, WITH THE TIME THE AVERAGE ATTENDANCE WOULD RENDER THE AIR UNFIT FOR RESPIRATION.

COUNTIES.	1 minute.	2 minutes.	3 minutes.	4 minutes.	5 minutes.	6 minutes.	7 minutes.	8 minutes.	9 minutes.	10 minutes.	11 minutes.	12 minutes.	13 minutes.	14 minutes.	15 minutes.	16 minutes.	17 minutes.	18 minutes.	19 minutes.	20 minutes.	20 to 25.	25 to 30.	30 to 40.	40 to 50.	50 to 60.	1 to 1½ hrs.	1½ to 2 hrs.	Total number of unventilated schoolhouses.
Rockingham			2	2	4	12	10	15	5	10	8	5	7	1	1	3	1	4			4	2	1		2			99
Strafford . .		1	2		4	3	7	6	6	9	5	4	9	2	2	1	2	1		1	5	1	1	1		1		74
Belknap . .				3	1	3	6	15	4	1	5	1		5	1	4	2	2			4	1	4		2			54
Carroll . .			1	3	4	4	9	6	3	3	6		2	1	3	3	1	2	1	1	1	2	1	1				58
Merrimack .	1			2	2	6	7	9	16	10	14	7	9	15	8	7	11	7	4	5	19	11		6		2	2	180
Hillsborough	1			1		6	6	9	11	5	6	6	8	7	2	3	4	3	8		2	2	6			1		97
Cheshire . .				3	3	1	6	7	6	6	2	6	7	3	2	3	3		4	3	6	5	2	1	1			80
Sullivan . .	1		1	1	4	2	4	4	5	3	5	5	4	3	4	2	5	5	1	1	7	1	3					71
Grafton . .		1		2	4	5	5	10	9	5	2	6	5	6	3	2	5	2			4	6	1	3	1			87
Coös . . .		3	1	2	4	9	7	6	4	1	2	8	1	3	1	1	2	1		1		1						58
Totals .	3	5	7	19	30	51	67	87	69	53	55	48	52	46	27	29	36	27	18	12	52	32	19	12	6	4	2	858

schoolhouses are constructed upon principles exceedingly dangerous to the health of the pupil. It is probably true that the figures somewhat magnify the actual defects in the schoolhouses represented, since the walls of the rooms are not totally impervious to air, and more or less is undoubtedly admitted by the crevices around the windows and doors, even with the schoolroom closed. This would in a slight degree lessen the defects as shown by the table, but would not materially impair the force of the statements made.

To appreciate the defects which Table No. 6 exhibits, it is necessary to understand the amount of lighting space needful to secure the best results in the schoolroom. This has been estimated by various specialists, a majority of whom agree that the total lighting area of a room should not be less than 25 per cent of its floor area. Some authorities, however, have placed the figures as low as 16⅔ per cent (one sixth of the floor area), while others have considered 30 per cent as little enough. It is certain that not less than the minimum amount stated above should be considered sufficient for any schoolroom, however favorably situated. A glance at Table 6 shows that a majority of the schoolrooms fall far below any allowable standard in this respect. In 1,068 schoolrooms the lighting area is less than 16⅔ per cent of the floor area, and in 488 rooms it does not exceed 10 per cent, and in 26 rooms it is 5 per cent and under. It will therefore be seen that according to the best authorities, our schoolrooms are insufficiently lighted in a majority of cases. In 347 rooms the windows are protected by neither blinds, curtains, or shutters.

Table 7 alone is sufficient to condemn our schoolhouse architecture. If it had been the direct object to destroy the eyesight of the pupils, better plans could not have been produced than evidently exist in regard to location of windows in these rooms. The arrangement in most of the rooms is abominable, and cannot fail to have an exceedingly bad effect upon the eyesight of the scholars. In four hundred and two rooms there are windows directly in front of the pupils, a condition which should be prohibited by the strictest law. In two hundred and seventy-one rooms light is admitted from all sides, and in seven hundred and eighty-one from three sides.

TABLE NO. 6.

SHOWING PER CENT OF LIGHTING SPACE TO FLOOR SPACE; ALSO HOW THE WINDOWS ARE SHADED.

COUNTIES.	Under 5 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.	11 per cent.	12 per cent.	13 per cent.	14 per cent.	15 per cent.	16 per cent.	17 per cent.	18 per cent.	19 per cent.	20 per cent.	20 to 25 per cent.	25 to 30 per cent.	Over 30 per cent.	WINDOW SHADES.				
																					Blinds.	Curtains.	Both.	Shutters.	None.
Rockingham	1	3	3	5	12	16	8	22	15	15	21	14	8	11	7	5	4	4	2		72	73	10	2	17
Strafford		2		5	5	7	8	7	9	16	11	3	8	3	2	2	3	11	1	1	67	18	2	2	26
Belknap			4	7	8	13	8	7	10	4	8	7		3	2			1			12	33	4		37
Carroll	1	3	3	7	11	8	4	8	10	6	4	2	4	1			1	1	1		12	22		3	47
Merrimack	1	2	7	6	13	18	21	28	17	20	8	7	8	4	7	11	2	3	6	1	41	78	9	2	64
Hillsborough	3	1	12	9	19	19	25	22	19	14	7	9	2	7	1	6	1	3	8	1	83	45	41	4	19
Cheshire	2		5	10	12	18	15	22	15	13	9	4	7	3	2	3	1	5	1		64	32	33	2	13
Sullivan	2	2	5	5	9	11	6	7	10	7	9	4	3	5	5	3	1	4	1		25	25	17	3	30
Grafton		1	5	6	11	10	16	15	15	10	8	3	6	3	5	1		3			19	39	6	2	60
Coös	1	1	2	1	7	4	13	6	7	6	9	2	3	1	3	1		1	1		23	14	2	1	34
Totals	11	15	46	61	107	124	124	144	127	111	94	55	49	41	34	32	13	36	21	3	418	379	124	21	347

TABLE NO. 7.

SHOWING LOCATION OF WINDOWS.

COUNTIES.	Right.	Left.	Front.	Behind.	On all sides.	Right and left.	Behind and front.	Right and front.	Right and behind.	Left and behind.	Right, left, and behind.	Right, left, and front.	Right, front, and behind.	Left, front, and behind.
Rockingham				2	77	19	1		3	2	57	17	3	1
Strafford	1			5	24	12	1		6	9	49	6	2	1
Belknap				1	23	9	1		3	3	35	1	4	6
Carroll				1	24	8	1				45	4	2	
Merrimack					57	26	4	1	2	2	86	5	5	6
Hillsborough	4	4			23	32	3		4	7	101	5	2	4
Cheshire				2	5	2			6	7	119	3	3	4
Sullivan				7	7	6	3				72	2	1	3
Grafton			1	5	18	12	6		2		62	4	8	3
Coös		1		3	13	6			2	2	46	3	1	
Totals	5	5	1	26	271	132	20	1	28	32	672	50	31	28

It is universally conceded by all experts in school hygiene that whenever possible light should be admitted from one side only, and in no case from more than two sides of the room. In the latter case it must be in such a manner as not to produce cross-lights. In Germany the law requires that the light shall be admitted from the ceiling or from one side only. Dr. Buck, in his treatise on hygiene, informs us that short-sightedness, dimness, and darkness of sight are increasing generally among school children, and that defective eyesight is much greater where the schoolrooms are poorly planned in regard to window arrangement.

Short-sightedness is very generally produced in the schoolroom. So well known is this fact that it has been classed as an affection belonging principally to the educated. It is no wonder that these schools report six hundred near-sighted pupils, as will be seen by reference to Table 10.

TABLE NO. 8.

SHOWING FACTS RELATING TO WATER SUPPLY.

COUNTIES.	Well.	Neighbor's well.	Spring.	Pump.	Brook.	River.	Pond.	Public water supply.	None.	Is it in danger of pollution?		Is it from a high or low source?		
										Yes.	No.	High.	Low.	Medium.
Rockingham .	75	54	20	6	1		1	4	19	29	106	91	36	19
Strafford . .	35	23	19	1	1		5	13	11	12	55	71	20	4
Belknap . .	28	29	9				1		14	6	51	48	14	4
Carroll . . .	18	18	16	2	7		1	2	16	6	37	48	7	1
Merrimack .	58	75	21	1	5				33	10	14	113	18	7
Hillsborough	51	53	22	2	4	1		33	18	6	90	112	24	9
Cheshire . .	21	50	29	3	6		2	17	19	5	57	97	13	4
Sullivan . .	19	30	32	1	6				10	4	45	62	11	6
Grafton . .	18	20	50	2	9	1			24	8	50	75	13	1
Coös . . .	9	20	26		3			1	16	4	20	40	8	1
Totals .	332	372	244	18	42	2	10	70	180	90	525	757	164	56

It will be seen that 180 schools have no water supply whatever, 372 depend upon neighbors' wells, 42 obtain water from brooks, 2 from rivers, while the reports do not state whether those under "well" and "spring" belong to the schools or not. In 90 schools the supply is reported to be in danger of pollution; and if the danger was sufficiently apparent to be noticed by the teacher, it is not to be presumed that it was imaginary. As the sources of pollution are often hidden, it is not unreasonable to suppose that many other wells are in as much danger as those surrounded by nuisances visible to the teacher. Evidently no attempt is made in many instances to furnish a good supply of water for the pupils. They are allowed to quench their thirst wherever they can find water, whether from a source free from contamination or badly polluted. In schools not supplied with water, the pupils usually go to the nearest point where it can be obtained; and this is not infrequently at a farmhouse well, which must from its very location be polluted. Indeed, pupils have been known to drink water from a polluted stable well, because the owner of the premises objected to the annoyance incident to their obtaining it from the family well.

TABLE NO. 9.

SHOWING FACTS RELATING TO PRIVIES, WATER-CLOSETS, ETC.

COUNTIES.	None.	One.	Two or more.	Separate for the sexes.	Not separated for sexes.	CONDITION.			DISTANCE FROM SCHOOLHOUSE.						Other nuisances.
						Good.	Fair.	Bad.	Connected.	Less than 5 feet.	Between 5 and 10 feet.	Between 10 and 20 feet.	Between 20 and 40 feet.	Over 40 feet.	
Rockingham . . .	6	50	127	129	45	98	34	39	13	7	22	59	53	7	14
Strafford . . .	11	21	80	80	21	63	11	26	10	1	12	26	30	18	12
Belknap . . .	2	49	35	35	48	42	11	30	26	1	11	24	12	6	7
Carroll . . .	24	37	24	25	34	20	13	25	9	6	6	21	10	4	8
Merrimack . . .	14	15	63	64	103	98	20	65	54	10	36	42	32	6	20
Hillsborough . .	5	93	92	93	93	123	32	29	47	12	21	43	20	13	14
Cheshire . . .	1	94	56	52	86	71	25	51	41	16	16	39	16	3	21
Sullivan . . .	3	70	28	27	71	44	12	42	18	10	12	20	17	6	5
Grafton . . .	11	83	33	33	83	48	25	38	32	8	10	30	11	8	11
Coös	5	47	25	27	43	26	9	34	24	7	8	15	6	2	6
Totals . . .	82	559	563	565	627	633	192	379	274	78	154	319	207	73	118

TABLE NO. 10.

SHOWING OTHER FACTS RELATING TO SCHOOLHOUSES AND PUPILS.

	Rockingham.	Strafford.	Belknap.	Carroll.	Merrimack.	Hillsborough.	Cheshire.	Sullivan.	Grafton.	Coös.	Totals.
Number of schoolhouses with cellars	39	36	12	2	15	53	29	11	10	6	213
Number on low and undrained land .	34	16	10	12	29	19	14	5	21	9	169
Number of schools in which vaccination is not enforced	92	62	80	72	166	126	120	92	106	64	980
Number built since 1875 with doors hung to swing inward	11	3	5	9	24	15	21	4	7	11	110
Number of nearsighted pupils . .	66	91	27	26	56	136	70	58	49	21	600
Number of schools studying physiology and hygiene .	89	38	29	38	81	82	49	42	29	20	497
Number of pupils studying physiology and hygiene .	450	515	242	140	445	724	450	143	149	138	3396

Table No. 9 shows a condition at many of our schoolhouses which is disgraceful to civilization, disgusting to good breeding, and dangerous to the health and morals of the pupils. Eighty-two schoolhouses have no privy or water-closet; 559 have only one, while 627 have privies or water-closets common to both sexes. Such a state of affairs would not be allowed to exist in any community that was watchful over the interests of the children.

Out of 1,204 privies reported upon, only 633, fifty-two per cent, are classed as "good"; 379, thirty-one per cent, are classed as "bad," and 192 as "fair." Two hundred and seventy-four are connected with the schoolhouse, 78 are within 5 feet, 154 between 5 and 10 feet, 319 between 10 and 20 feet, 207 between 20 and 40 feet, and 73 over 40 feet from the schoolhouse.

In many reports the teachers made special remarks upon the condition of the privy, and in some instances they were stated to be in a horrible condition, having been neglected for months and years; and this is true even with many of those connected with the schoolhouse. One hundred and eighteen other nuisances were also mentioned.

In one or two instances the schoolhouse served as one side of a hog-pen, and other conditions equally as bad are reported. From these reports it is evident that in more than one third of our schoolhouses there is no sanitary supervision whatever.

CELLARS.

Six hundred and thirteen schoolhouses are reported to have cellars; a majority of these cellars are not used, and many of them are damp and unventilated. Some of them are used for woodsheds. The reports do not indicate that they receive any special care, and it is to be inferred from frequent remarks made by the teacher that they are in many instances a constant nuisance. In a few cases water stands in them.

SITE.

One hundred and sixty-nine schoolhouses stand on low and undrained land, while the remainder are reported to be upon healthful, well-drained localities. Not a few teachers, however, report that water stands under or around the building after a rain. A damp site is a constant source of danger, as has been frequently demonstrated by experience. The impairment of health which follows a residence upon damp ground, although slow and almost imperceptible in its progress, is of an exceedingly dangerous character, since thereby organic diseases are frequently developed, especially consumption. The vitality of the pupil is greatly weakened and a condition established which has very little power to resist disease. Of the 169 schoolhouses on low and undrained land, 129 are not ventilated; 33 have wells, 50 rely upon neighbors' wells, 32 have springs, 9 obtain water from a brook, 3 from a "pump," 7 patronize the public water supply, 1 gets water from a pond, 5 do not state the source, and 29 have no supply whatever.

In connection with these same houses, the reports say that the condition of the privies belonging to 54 is "good," 30 are classed as "fair," 2 condition not stated, 70 "bad," and 13 have none.

VACCINATION.

Notwithstanding the law prohibits unvaccinated children attending public school, the teachers of 980 schools report that no attention is paid to the law.* There must, therefore, be many thousand unvaccinated pupils daily attending our schools. This, like the neglect of many laws, is due probably to the indifference of school officers in enforcing the laws, and not from any serious opposition to it. During the recent epidemic of small-pox in Montreal vaccination was ordered among the children in many of our schools and successfully carried out. The public believe in the efficacy of vaccination, and in order that the number of persons susceptible to small-pox may be kept at the minimum, the law should be enforced.

DOORS.

In 1875 the Legislature passed a law requiring schoolhouse doors to be swung outward.† Notwithstanding this, 110 schoolhouses out of 140 that have been constructed since 1875 have doors swinging inward, in direct violation of the law. The object of this law was to provide means of escape in case of a panic from fire or other cause.

NEAR-SIGHTED PUPILS.

Six hundred near-sighted pupils are reported. A large majority of the cases of near-sightedness are contracted in the school-room. Statistics gathered in this and other countries prove this fact. Prof. Cohn in the examination of 10,060 school children in Germany found the percentages of near-sighted pupils as follows: In suburban schools where the light was better than in town schools, 1.4; in city schools, elementary, 6.7; in upper girls' schools, 7.7; in middle schools, 10.3; in the high schools, 19.7.

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* "No child, unless he has been duly vaccinated or has had the small-pox, is entitled to attend any public school; and the prudential committees of the several districts, and those who exercise the powers of such committees, shall not allow any such child to be admitted to or connected with any such school." — General Laws, chap. 91.

† "The outer doors, and doors of all passages leading outwards, of all churches, schoolhouses, public halls, and buildings to be used for public purposes, except depots, hereafter constructed, shall open outwards." — General Laws, chap. 106.

These figures show that the condition is acquired and increases with the advancing period of school life. The most prolific cause of near-sightedness among school children is undoubtedly from the amount of light and the manner in which it is admitted to the rooms. There are other factors, however, like glossy blackboards, too small type, the position in which the book is held, etc., etc., which contribute to the same result.

The defects which exist in our schoolhouses, as shown by the sanitary survey, may be summarized as follows:

1. There are too many seats in a majority of the schoolrooms.
2. Too small an amount of air-space per pupil.
3. Lack of ventilation.
4. Insufficient amount of light.
5. Improper location of windows.
6. Deficiency in blinds, curtains, and shades.
7. Water supply entirely wanting.
8. Water supply of questionable purity.
9. Privies or water-closets not provided for the schools.
10. Privies or water-closets not separate for the sexes.
11. Privies or water-closets so neglected as to be dangerous to the health of the pupils.
12. Privies or water-closets so located as to constitute a nuisance.
13. Other nuisances in vicinity of schoolhouse.
14. Cellars in an unsanitary condition.
15. Buildings situated on low and undrained sites.
16. Doors hung to swing inward, in violation of the law.

In addition to the above, other conditions detrimental to the health and comfort of the pupil are shown in the survey. Some teachers condemn in strong terms the construction of the desks, and the manner of heating the rooms. Most of the rooms are heated by stoves; some are overheated, while others are insufficiently heated.

The object of this paper is to call attention to the more important defects which exist in our schoolrooms, in as brief a manner as possible. These facts having been presented, it is the duty of some authority to take such action as will not only remedy the defects, but provide for the construction of schoolhouses in the future upon hygienic principles. It is a matter of great importance, and the Legislature of New Hampshire should thoroughly consider the subject and enact such laws as will secure more healthful conditions in our schoolrooms. There are two ways in which this may be brought about: First, by providing that before any schoolhouse is constructed, a plan of the proposed building shall be submitted to and approved by some competent department, board, or commission, or that said department, board, or commission, shall furnish a suitable plan for the given district free of expense, upon application; second, the Legislature might authorize the compilation of a manual of schoolhouse architecture and hygiene, a copy to be furnished to each board of education in the State.

The first proposition would make it obligatory upon school authorities to construct all schoolhouses upon hygienic principles; the second would simply instruct boards of education or building committees, in the most approved systems of schoolhouse architecture, but would not insure the following of its teachings. A combination of the two plans would undoubtedly secure the best immediate results, besides doing much to educate those having charge of our schools in the construction and sanitation of schoolhouses. The subject should receive the careful consideration of every one interested in our public school system.

SANITARY CONVENTION.*

PAPERS AND DISCUSSIONS.

INTRODUCTORY ADDRESS.

BY HON. JAMES A. WESTON.

Ladies and Gentlemen, — For the first time in the history of the State a meeting has been called for the sole purpose of discussing questions inseparably connected wlth the physical welfare of the people. A convention of this kind may almost be said to mark an era in the annals of our progress. A generation ago the simplest principles of sanitation were scarcely known among the people, and the prevention of disease was hardly recognized by the medical profession, much less taught in our public schools or fostered by legislation, except in the instance of small-pox, cholera, and yellow fever. Marvelous progress has been made in a very short time, and the results have saved to humanity and the country thousands of valuable lives, and vastly lessened human suffering. Seventeen years ago the first State Board of Health was organized in this country, and to-day over thirty States have such Boards, earnestly and ably supported by their respective commonwealths, besides hundreds of efficient local health organizations. Sanitary science is being taught in the colleges, physiology and hygiene in our common schools, and even sanitary journals are now being supported to an extent that renders their publication profitable. Education, observation, and investigations have nearly dispelled the huge incubus of superstition that for centuries rested upon the bosom of mankind, teaching the doctrine of divine malediction and supernatural agencies as the cause of disease, and left instead the now recognized truth that all disease proceeds from natural causes. The cause of typhoid fever is now looked for in infected water or some other suitable media ; diphtheria in a neglected vault, cesspool, sewer, sink-drain, or like dangerous environment. Other diseases come from causes suited to their development or propagation.

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* Held at Manchester, January 25, 1887, under the auspices of the State Board of Health.

These general principles have been recognized and demonstrated, and we have met here to-day to discuss some of them, and thereby to enlighten, as far as may be, the public mind by pointing out some of the avoidable causes of disease. The work already done by our State Board of Health has been felt for good in all sections of the State, and this convention is one of the fruits of its efforts. The great object to be attained is the diffusion of sanitary knowledge as extensively as possible among the people, for by education the greatest reforms are secured.

Sanitary work should be fostered by the people because it throws a safeguard around our homes. No community can prosper without a certain degree of healthfulness, and its prosperity is enhanced in proportion as its death-rate is reduced. A family with one or more of its members continually sick cannot reach that degree of prosperity and happiness that obtains where health and vigor abound. The family is the unit of the community, and an unhealthy community is like a sick family. Not only has the death-rate of many places been reduced in a very marked degree by sanitary work, but there has been a corresponding reduction in the amount of sickness and its attendant suffering, anxiety, loss of time, and expense.

Deaths from typhoid fever, scarlet fever, diphtheria, cholera infantum, and a score of other diseases, might with propriety be classed as fatal accidents, the most of which might be prevented even with our present knowledge of causes. Sanitarians assert this, and intelligent physicians corroborate it. It becomes, then, not only a religious duty to enlighten the people upon these subjects, but a still holier one that the head of every household should zealously protect the home against the insidious diseases that come through the avenues of sanitary neglect.

The clergy have found it necessary in all ages to hold meetings to quicken and awaken the consciences of men; we deem it no less necessary to awaken and arouse the mind to a fuller consideration of physical evils, as the latter are usually the basis upon which are built the hideous edifices of immorality, crime, pauperism, and premature death. We bespeak for this convention a successful and profitable session. The program shows that papers are to be presented by men of ability in their professions. It is intended that each paper shall be followed by a discussion of its salient points. Let no one hesitate to inquire upon any point not made clear or not fully understood. We purpose, as far as possible, to make this occasion a school in which we are to teach and to be taught. We, of the city of Manchester, have reason to congratulate ourselves, for wherever a convention of this character has been held, an impetus has been given to sanitary work, and we hope and believe that the people of this city will by it be profited in no small degree.

THE SANITARY NEEDS OF MANCHESTER.

BY W. W. WILKINS, M. D., MANCHESTER.

I am under personal obligations to the state and local boards of health for the opportunity to express my views in regard to some of the evils existing in this city which affect the public health injuriously.

To refer to them at all in terms pungent enough to awaken any reflection, is to place myself in the unenviable position of criticising my friends, but the conscientious practitioner must always be willing to do this, even when he knows that in doing so he will make for himself enemies.

And if, as this State Board of Health may move from place to place, the medical men will come forward and tell what they think, its labors will not be in vain, although in a hurried report, with business or professional studies constantly threatening to foreclose on us, we physicians may not give our work sufficient thought, may overstate things, or be radically wrong in our opinions. The press is always open to us, but to offer opinions that are not worth the asking for looks like writing for a cheap notoriety, and would be most probably barren of any results. People will pay liberally to be amused. They will pay fairly well for some one to tell them how to secure heaven and how to keep out of hell, but it would require a man of eloquence to draw an audience for the purpose of telling them how to live best in this world, so far as physical health is concerned, to really enjoy the only world we absolutely know anything about. With this apology for embracing the invitation I would, if I could, hold up the mirror and ask the citizens of Manchester how they like the looks of some of the unsanitary conditions in this city, and also the more important question, What will you do about it?

In looking over the topics presented to the consideration of those interested in this convention I noticed one that I felt could not fail of awakening interest in the minds of the physicians of this city. "The Sanitary Needs of Manchester" is a subject upon which we have all bestowed more or less thought. To no one has it assumed more importance than to the medical attendant with patients under bad hygienic conditions, when, as too often has been the case, the unhealthy surroundings have had a determining influence upon the results of disease. None are so frequently reminded of the pernicious effects of overcrowding, of badly constructed tenement houses, of the evils arising from an imperfect sewer system, of the selling by peddlers of all kinds of vegetables, fruits, and meats without inspection or supervision, of the need of a thorough inspection also of our markets, that only wholesome food may be sold to the inhabitants.

Manchester needs some kind of medical visitation and supervision of her schools. This might look like a very expensive innovation to the tax-payers, but it ought not to be made so. We who practice the art of healing but half fulfill our duties when we render to the sick medical advice and attendance. In a broader, higher, more unselfish sense, we are teachers in medicine and guardians of the public health. The education and the nature of their calling forbid that honorable and sensitive physicians should push themselves into positions where their advice is not wanted, and will not be followed; when the community recognizes the value of their counsels and gives them a position that will make their labors of any practical value to the schools, this service would, I think, be rendered cheerfully by them without fee or salary. The position should be made an honorable one, as honorable as it would be responsible, but it should be entirely removed from the corrupting influence of politics; consequently its rewards should have no money value. The recompense would be in the public recognition of professional worth and ability, and in the consciousness of having a direct influence on the improved sanitary surroundings of the dearest and most unselfish of our friends, the children of our public schools. In no way could we make a more suitable return for the many kindnesses daily bestowed upon us by loving friends, or better honor the noble profession that we represent. The greatest wealth of this city is in the young hearts and brains that are to control and mold its history in the near future. All of the city's intellectual, moral, and financial prosperity stands intimately connected with the vigor of our school children. The children, — these are the "jewels," not only of the home circle, but of the city and State. The wand of power will slip as noiselessly from our hands to theirs as December glides into January. What shall this harvest of young manhood and womanhood be? It is very generally believed that many of those who graduate in our public schools do so at the expense of their health. Others are taken out of the schools by their parents, who prefer to have healthy to educated children when both these objects cannot be obtained. Many are removed from the schools on account of impaired health, some to drop back into other classes or to leave the school permanently on this account.

It was my fortune for a number of years to be connected with the public schools in an adjoining town. I was personally acquainted with all the pupils. The terms were much shorter than they are in the city. It was a healthy farming district. The children were robust; I have not the remembrance of a single instance of a pupil being removed from the schools on account of breaking down of the general health. I felt then and I still feel that in all the essentials of a good common school education the children of Bedford, notwithstanding the very much shorter terms of school, were as well fitted for their positions in life as the graduates of grammar schools of this or any other city with which I am acquainted. Certainly, if the boys who are in our schools to-day show as much ability and fitness for the active enterprises of life as the sons of Bedford have shown in the business circles of our city, and as much well-disciplined talent as they have shown in the councils of the State and nation, no fault wlll be found with their education. The practical questions that must arise (if it be true that children pass through this formative period of their lives with better results in the country than in the city) are worth the careful study of those interested in sanitary science and all those interested in the best interests of our public schools. The shorter terms of school need not be monopolized by our country towns. We will venture to say that the majority of the mothers of our school children have said with every returning summer, " I shall be so glad when the school closes; I want to see my boy or my girl (as the case may be) eat a hearty breakfast." And as soon as welcome vacation comes, the little ones are hurried off into the country or down to the seaside as if to save their lives, even if the mother goes without her new bonnet and the father goes to church with a coat the least bit shabby, and I have no doubt but that many precious little lives have been saved by just such sacrifices.

The children in our country schools have plenty of pure, uncontaminated air. This is one of the essential conditions of good health, and without it the best of instructors must fail in securing the desired results of their labors. Mr. Clarke, a member of the school board, himself an experienced teacher, and well qualified to form a just opinion, said that he had made some explanation in regard to the appropriation for repairs, which is considerably larger than usual. He said the Franklin-street schoolhouse was in very bad shape and needed attention. There had been cases of illness, and even death, resultant from pupils attending the school, and he considered that the city would be criminal if it allowed the building to remain in its present condition another year. There was not a well-ventilated school building in the city and scarcely a well-ventilated schoolroom, and it was outrageous to allow this condition of affairs to continue any longer. He believed in strong, healthy bodies as well as minds, and did not believe in educated corpses. Certainly with such a statement, coming as it does in a report before the school board, Manchester has great need of some kind of medical or sanitary supervision of her schools. A matter of no less importance is the best method of educating our girls without endangering their health. In the grammar schools the girls are quite the equals of the boys in physical endurance and scholarship. Up to this period of their lives they have had the same freedom from restraint. The muscular system has been well developed by plenty of exercise in the open air, and aside from their mental drill they have had no responsibilities or cares. With the advent of puberty they lose these conditions for maintaining this hardihood and they become delicate. Parents will no longer allow them the same liberty on the streets, and for the most of the girls their skating, coasting, and rambling days are over. Very many must, while they are competing with the young men in the high school, devote a portion of their time daily to some of the fine arts not taught in the public schools, as music, painting, dancing, etc., must entertain callers and make themselves agreeable as the young ladies of the family, must get up and run church fairs, or decorate the churches for the Sabbath service. Often their services are required in running and managing the household, perhaps acting as fancy cooks or laundresses, besides doing more or less of their own sewing, as dressmakers and milliners, if they would have their dress and the many little accessories which go to make up a young lady's outfit in the prevailing style, in which if they unfortunately fail, it is equivalent to their losing caste among their more fortunate and fashionable classmates. And still with all these odds against our girls they manage not unfrequently to carry away the honors in their classes. Can any one believe that this can be done without risk of serious injury to them, when we take into consideration that those with whom they are striving are young men whose muscles are hardened by constant practice in athletic games, — base ball, football, boating, and all kinds of exercise enjoyed in the open air, with, at the same time, almost complete freedom from responsibility outside of their studies? Is it strange that our young men graduate in fine physical condition, with abundant reserve nerve force to enter on a business career, or enter upon a course of collegiate or professional studies, while the poor, tired, used-up girl becomes a nervous thermometer, as sensitive to her surroundings as a poplar leaf is to the breezes, that sooner or later they drift into the care of nerve doctors or other specialists, that observing pathologists look upon them as wrecks, the outcome of our present injudicious school system of education of the sexes in the higher grades of our schools?

It is firmly believed by a respectable number of our citizens, that not only the health but the lives of some of Manchester's fairest daughters have been sacrificed to this system, and while this cannot be proved, other causes possibly having quite as profound effect as the overtaxed nervous system on the final result, still, enough could be shown to make it prudent for parents that have delicate girls to hesitate before allowing them to take a classical course in our high school. The best good that can come to any woman is to be the mistress of her own household. No honors or pecuniary success can compensate for the loss of the social life with its enjoyments and its burdens. If she be a warm-hearted, affectionate woman, her home is a sovereignty that acknowledges her right to govern, and the man or child that rebels against her authority does not deserve the blessing of being her subject. Everything that will make woman more of a power in her home and society should be provided for her by those who have at heart the future welfare of our city. I can suggest nothing that looks so hopeful as to provide our girls with a high school of their own. It should be second to none in the city in its corps of instructors. It should be provided with all the facilities for teaching the sciences thoroughly. Let them acquire all the knowledge of the languages, ancient or modern, for which they have taste, ambition, and ability. Give them advantages in acquiring a knowledge of the fine arts and a familiarity with our best literature. Let them, if desirable, take more time in such a high school than they do now, but at all events let them be graduated such young ladies in respect to health and physical development, refinement and culture in their address and manners, a knowledge of the natural sciences and the living thoughts that are molding the intellectual world to-day, that Manchester citizens may be proud to say of them, "These are our daughters, the fairest, best, and loveliest of God's good gifts to us." Why might not buildings be erected for a high school for our girls on the same general plan of structure as the pavilion hospital? A large lot of land being obtained, the buildings of only one story should be erected close to the sidewalk. This would inclose a court that would give them convenient grounds for recreation, gymnastic exercises, and outdoor games that they could not otherwise obtain. There would be no stairs to climb, and thus one of the tortures of the present system would be eliminated. Such school buildings could be more perfectly ventilated and better lighted, two very important items in estimating the value of a schoolroom. Such buildings would be less imposing in external appearance than some of our grammar school buildings, but in all the essentials of a perfect schoolroom they would surpass any that we have, and could be erected at much less cost. We presume that no royal visitor to this country would accept the model of such a structure. Let us hope if Don Pedro ever tires of the play-house given him by this city, and which was made to represent one of our grammar school buildings, that in the interest of suffering childhood he will pull out and destroy the stairways before returning to us this beautiful toy.

Manchester needs a hospital for its worthy poor. It is hardly generous for our courts to send a man up for sixty or ninety days in order to give him the benefit of good nursing, appropriate food, and skillful medical treatment, and yet to-day it is the only way that I know of that this city can bestow such charity on the poor. The city owns as fine a site for such a hospital as can be found in New England, and large enough to give the institution abundant ground for all its present and future wants; near enough to be easy of access and yet far enough away to be free from many of the unsanitary conditions of the more thickly settled part of the city. The brains of our philanthropic citizens have been exercised over this question for a series of years, and the idea has been so often expressed that we cannot help thinking that the wish was somehow connected with the thought that some big-hearted, wealthy citizen might die and leave all his money to endow such an institution ; but Manchester's moneyed men have an obstinate way of living, and it is possible that in the event of their leaving us they would be just as obstinate and do just what they had a mind to do with the fortune that was the exponent of their individual industry and ability. Certainly the best way to secure their help is to go to work and help ourselves, and let them see a moderate sum well invested in this charity. When they come to realize the dividends that such an institution may return to the public, it is more than likely that it would find favor with those who have the money, and they would be glad to bestow upon it some of their surplus. The buildings need not, indeed should not, be of the more expensive class. Let the money be saved to carry on the work and not for ostentation and show. Commence the work with a small appropriation, and in a few years we should have all the plant easily paid for, and at an expense commensurate with our means. If some hospital tents were pitched on Wilson Hill or near to Rock Rimmon during the intense heat of summer, and mothers with their little charges were given transportation to these high lands, I have no doubt it alone would save more little lives every summer than all the drugs of the pharmacist could do. Good food and free fresh air given to our little children at this season would go a great way in removing from us the unenviable reputation of having an excessive death-rate. Let us have, also, a free public dispensary that shall furnish medical advice without fee, and medicines at first cost, or, in extreme cases of poverty, medicine without cost. The physicians of Manchester, I think, would give their services if such a charity was properly organized. They have done their part in trying to interest the public in these charities in the past, and it is no fault of theirs that cases requiring hospital treatment are sent out of the State and imposed upon the benevolence of others. We feel the humiliation of the situation if you do not. The poor and the unfortunate we shall always have with us. Let us stop to think of something else beside money-getting, and extend a kindly hand to the sick and unfortunate.

Manchester needs a change in the method of repairing the streets. Good gravel that will pack well and make a hard, substantial road is difficult to obtain in this locality, and it has been the custom to cart on a marl that packs when it is slightly moistened, apparently making a model street, but as soon as this marl becomes thoroughly dried, breaks up into an impalpable dust that is intensely irritating to the mucous membranes, and is one cause of the excessive amount of catarrh in this locality. It is a crime to put it on the streets, and yet every year this patching goes on, and the nasal, pharyngeal, and bronchial catarrhs are an evidence of the industry of the city employés in repairing the streets. The stone-crusher and steam roller gave us the first perfect street work we have had. If there was some way devised by which such streets might remain undisturbed, not being constantly dug up, the traveling public would have little to complain of. Manchester needs some better method of disposing of its refuse from the streets. Dirt has been described as matter out of place. One would not have to travel far or observe very closely to find examples of the displacement of matter in this city. The back street is no place for the refuse from the table, decaying fruits, vegetables, and the many odds and ends that offend the senses and pollute the atmosphere. Neither are the principal thoroughfares the proper place for the fertilizing materials that would be useful on the fields of the farmers. Vaults and cellars for the reception of the most offensive forms of sewage should not be allowed within the incorporated limits of the city. Such receptacles are a constant offense and make the air of some of our streets almost intolerable after nightfall during the warmer months of the year. With an abundant water supply, there is no excuse for this abominable nuisance. No amount of municipal enactments, together with the utmost vigor of police supervision, can ever make of them anything but a constant menace to the public health. Only incompetent and unworthy officials wound the hands that feed them. It is labor that builds the city and embellishes it, that feeds the inhabitants and pays the taxes. When labor prospers we all rejoice, when it is depressed we all suffer. Shall we poison with unhealthy gases the laborer to whom we owe so much? During the heated term, the death-rate of infants and children in the sections of the city where these vaults are most abundant is enormous, and while this is not the only cause of increased mortality with this class it certainly is not one of minor importance, and it is fully within control of our city government. I do not know how to class the administration that will allow this fearful loss of life to continue and not make some effort to save the lives of these little innocents who would, if spared, be the producers, the hands to feed us. To insure relief from this evil would cause commotion among that class of landlords who are never satisfied unless they receive two or three times as much return for the use of their money as the laboring man recieves for the few dollars he puts away in the savings bank. We have had lately entailed on to our city government the office of inspector of buildings. Would it not be well to make this office something more than an ornament? Let such an inspector examine closely into the sanitary needs of our tenement houses and let the city compel the landlords to supply the deficiencies.

The waste offal that goes to the dump should be burned. Furnaces for this purpose are in use in other cities. The city authorities could not have made a worse disposition of this material, removing it in the first place to the close proximity of the most thickly settled part of the city, polluting the atmosphere over a large area convenient to two principal streets over which there is more pleasure-driving than almost any other part of the city; contaminating one of the principal streams that run into the Merrimack, the bathing-place for the boys, who are partially sheltered from observation by its high banks; near enough to the Valley cemetery to be a serious offense to the living who have friends buried there; and from this festering, stinking mess, building a street with a deep grade, so that in the future every time a water pipe, gas pipe, or sewer is to be laid or repaired, the public may have the full benefit of the decomposing mass, and thus the "sins of the fathers be visited upon the children," and for how many generations we have no means of knowing. Burn the offal, and give our boys the privilege of bathing in pure water instead of contaminated water, or, better still, listen to the repeated demands and give us a public bathing-place. This is a necessity and may well be reckoned as one of the sanitary needs of Manchester.

In laying out the streets of this city, its founders, the Amoskeag Land and Water-power Company, gave to the city a most munificent gift in the public commons, which add so much to its beauty and healthfulness. There is not a home in the thickly settled part of the city, where the tired mother, in a few minutes' walk, may not get recreation and rest under the shade of magnificent trees and have the satisfaction of seeing her baby play in the cool, green grass, provided there is no policeman around to prevent the little one taking such liberties. The city is indebted for these priceless gifts to ex-Gov. E. A. Straw, and they are a better monument than was ever wrought out of bronze or marble. Other works, equally durable, testify to his power and breadth of brain, for he left the impress of his hand on every enterprise connected with the development and growth of this city, but the beautiful commons with their green leaves, the springing grass, and singing birds, speak eloquently (if we measure men by what they do and not by what they say) of his large and generous heart that was ever in kindly sympathy with the laborer and the poor. In keeping them what he designed them to be, we can most appropriately show that we respect his memory, that we do not forget the service he bestowed upon this town when the little municipality was yet in its swaddling clothes.

We have a beautiful park in the heart of the city, — Hanover Square. It is surrounded by pleasant residences, and Hanover street, that bounds it on the south, is the main artery of travel for the country lying to the east of the city. This park or common contains a pond fed by springs in its banks and by Mile brook, which has been a kind of surface sewer ever since there has been any settlement to the north and east of this square. This pond has been to our city officials what the laboratory has been to the chemist. Here they have studied sanitary science and drawn inspiration gazing into its green and scum-coated waters. They have treated the problem on much the same general plan that they treated offensive supulchers in Judea a few centuries ago. They have drained it and scraped the bottom. Some one whose ship has been troubled with barnacles probably suggested this idea. Here the city authorities showed their spirit of economy by utilizing every particle of the filthy material for grading around the pond, and no doubt the rank vegetation that grows on this portion of the square is a satisfaction to those who undertook the job. But the returning summer the pond had things all its own way, and that way was generally directly opposite to that from which the wind came. No clergyman of a Sunday morning, even when putting on his ecclesiastical harness, could think of theology with such villainous odors penetrating his study. No lawyer could work up a brief in language that would pass current in polite society. It might be emphatic, but it would be the briefest thing on record. The old sore required treatment again, and the pond was drawn off. The persistence with which this part of the treatment (depletion) has been followed up would lead one to think that some doctor, who still has confidence in the lancet in aggravated cases, may have had some influence in the consultations. The sewage was drained off, and the slime and ooze carefully sprinkled over with sand. No doubt we owe this brilliant thought to some man familiar with the grocery business. Rakes of wonderful prehensile power have agitated its surface. Even fire-rafts, if I am not mistaken, have played their little role in this sanitary drama. Again, it has been drawn off and let alone (expectant plan of treatment, rest and time), hoping something would turn up, but the only things to turn up have been such vile weeds as find an appropriate soil in scum and waste, and a new class of odors that have pleased the public but little better than those of former times. But there stands Sebastopol unconquered by all the pounding it has received. Our retiring mayor acknowledges the defeat, and recommends that its contents be transferred to the sewers, and the pond be filled up. It was a matter of pleasant surprise to learn, however, from the same source, that Mile brook was drying up, for it gave the impression that the residents along its banks must have entered the sewers; that possibly the Board of Health may have had something to do with the drying up of Mile brook; that, give them another year, with a cordial support of the citizens to stay their hands while the good work goes on, and Hanover Common may have its pleasant pond without the offense. Pure water gives forth no offensive odors. Remove the filth from the supply, and the overdosed pond will require no other treatment. The ponds we have should be reservoirs of pure water. Water will keep as pure in Hanover Square as at Manchester Centre, provided the conditions are the same, — an uncontaminated supply and a clean receptacle. Do not diminish their size to bury up one costly piece of stone-work to give the fortunate bidder a chance to put in another equally costly and equally useless. There can be jobs enough found for the friends of our city officials without saddling them on to the committee on commons. With the inclination of its watershed, with a soil composed of pure sand as porous as a sponge, and originally almost entirely free from organic matter, with an abundant supply of pure water within a few feet of the surface, with the inclines of this valley on which our city is built opening to the north, giving us the full benefit of the breezes from the White Mountains, with the broad, beautiful Merrimack sweeping through the center of the city, one would think that it would require adepts in blundering to make this anything but a healthful city. Unquestionably the city has paid money enough to secure a perfect sewer system. The money is gone, and the city has the experience.

Among the causes of diseases arising from unsanitary conditions, bad sewage has appeared to have a direct influence on the general health of the city. I have used the qualifying word appeared, for I do not claim to have a knowledge of civil engineering, or that nice analytical knowledge of chemistry, to prove my statements. I know how easy it is for any old woman to prescribe for the sick after reading a medical almanac, and I presume that doctors who hastily run over a work on sanitary engineering acquire something of the same confidence. Nevertheless, common sense teaches us that it should not be a difficult problem to make water run down hill. That, given to us the Merrimack River for an immense viaduct, and a city on a plain inclined toward that river, with a distance of not more than one mile from its banks, with a lake thirty miles in circumference, from which to draw an inexhaustible supply of water, the problem of removing sewage without endangering the health of the inhabitants ought not to be impossible, nor, indeed, difficult. Thirty years' constant tinkering should, we think, have given us better results. The fact exists that one-half hour's rain in summer (when our sewers would be supposed to carry only the ordinary drainage) has flooded Elm street and run over the sidewalk into the cellars.

This is not a rare occurrence, but every thunder-shower that is unusually heavy and prolonged demonstrates the folly of building a sewer system like a tunnel, and having the small end of the tunnel for an outlet. The sewers of Manchester are splendid in time of drought, provided the wind is in the right direction, but the wind and the storms are, unfortunately, not under the jurisdiction of our municipal fathers, and as a result of this, every southwesterly wind during the heated term gives us, in the broad thoroughfare of our city, if not as many stinks as the too literal traveler found in the city of Cologne, smells that are at least quite as pungent, and surely enough to satisfy any reasonable man's curiosity in regard to the state of our sewers. Our sewers representing a tunnel with the small end of the tunnel for an outlet, any sudden dash of rain fills the mains' full bore. The sewage collected at the bottom of these sewers is churned up and deposited on all sides of the interior of them; this festering, decomposing layer is the source of unhealthy gases and disagreeable odors that find their way to the cesspools that are placed close to the sidewalks, for the benefit of the promenading public, and into the houses for the benefit of the women who have so much work to do that they cannot enjoy the luxury of promenading, and to the baby who has not learned the art of promenading. They find their way into the houses because nature has given us so many natural advantages for a perfect sewer system. This seems like a contradiction of terms, but we believe it to be, nevertheless, true.

We started with the proposition that water had a natural tendency to run down hill, and, if this is so, the sharper the incline the faster the water will run, provided it is given a free outlet. But this is what our sewers have never had; consequently, when the mains are filled, the water backs up into the lateral sewers. If, as frequently occurs in heavy showers, the cesspools are carrying water to their full capacity, the air in these lateral sewers has no means of escape except through the traps into the houses. The greater the incline the more will be the hydraulic pressure on the air contained in the sewers, and as a result the more certainly will the houses connected with these lateral sewers be filled with air from them. Wilson Hill contributes its share towards this result. The higher the elevation the more surely will the dwellings be contaminated by sewer gas, and the lower the elevation the more surely will they be overflowed with water and sewage by this system of engineering. I do not believe there is a house from Wilson Hill to Elm street, that is connected with our sewers, that does not at times either get gas or water from them, if we except those residences situated on the line of the Bridge-street sewer. This sewer is probably capable of carrying all the water that at present will be turned into it under the varying conditions of drainage. What it will do when lateral sewers arise to tap it in all directions, and it is extended to its proposed terminus and to the outlying regions beyond, as the growth of the city will soon demand that it shall be, I do not know; none but an engineer familiar with such problems can give us any satisfactory solution. I believe this to be the best piece of this kind of public work that has been done by the city. Its course is direct, its outlet capacious, and its incline or fall sharp enough to keep its contents constantly moving. It is cheap enough if it does its work well; those that do not do their work well are costly at any price.

The lightest water-seal will keep unhealthy gases from entering our houses from the sewers if the atmospheric pressure at the earth balances exactly the pressure of the air against the walls of the sewers; but as surely as water rises thirty-three and one third feet, if you take off the pressure of atmosphere from its surface, just so surely will every fluid, air, water, or gas rise or fall toward or away from every available outlet, with these changing conditions of atmospheric pressure. It is this want of equilibrium that in one case sucks all the water out of the traps (siphons them out) making them practically useless as a protection from the sewers, the gases having free access to our dwellings, in spite of our supposed water-seal; and, in the opposite conditions, forcing through the water in the traps the compressed air of the sewers, and accomplishing the same result, as far as bad air in our dwellings is concerned. This want of equilibrium between the external air and that of the sewers, this vacillating current of pressure and counter-pressure, is only to be got rid of by skillful engineering; hence one of the most pressing sanitary needs of Manchester is the service of a good sanitary engineer.

I have referred to our sewer system, but I fear that I am open to criticism. I do not understand that we have a sewer system or ever had. As different city governments came into power they have thought it necessary to carry on the public enterprise and make a record. The money must be expended, and something must be shown as a voucher for these expenditures. It matters little whether it be a bridge, public buildings, so many yards of paving, or a sewer; any of these items read well, and please the tax-payers, and thus the government stands by its record. The city engineer, of course, obeys orders, and makes the best job his instructions allow him to, but he has (as I understand the situation) but little opportunity of utilizing the patchwork of other engineers, even if he has the inclination; and so the patchwork goes on without system from year to year, men who know little or nothing of the best methods of the day directing and laying out the work for their employés, appointed by themselves, and the only one whose education and calling in life gives him any fitness for the work acting in a subordinate position, carrying out the plans of others. Let us have the professional services of one who is known to be an expert in this department of engineering; whose position in his profession will be a guaranty of his ability and one by all means who will not be instructed by incompetent officials or subject to the whims and caprices of inexperienced men who wish to magnify their short terms of office with public monuments of their stupidity. Let such a man come here and examine the sewers we have; at least, such as can be readily found. Many of them never will be located until some unusual excavation or accident occurs: some man or horse tumbles into them and is injured and we thus learn of their locality through the committee on claims. Let such an engineer draw up plans, comprehensive enough for the present and future wants of the city, utilizing, if possible, these we have. This, it seems to me, is the only way we shall ever work toward any definite end in getting rid of sewage without endangering the health and lives of our citizens.

It will cost us something to secure the services of a first-class man. It will cost us more money to make the changes necessary to reap any benefit from his skill and experience, but this can be paid for in money which can be replaced and which will never be regretted if it gives us healthy homes. Every year of this tinkering, the muddle grows worse and the expense of remodeling will be enhanced. It will be cheaper to make the change this year than two, three, or five years hence. Sooner or later the citizens of Manchester will demand that this city shall become as healthful and salubrious as it is beautiful in situation, and that in the best of sanitary conditions, as well as in the enterprise of its business men, it may justly be entitled to the name of the Queen City of the Merrimack River Valley.

ABSTRACT OF DISCUSSION.

At the close of the paper Hon. James A. Weston, president, announced that it was the intention to make the meetings, as much as possible, a school in which all might learn something, and invited a discussion of the preceding paper.

Hon. Henry H. Huse asked if Manchester had a system of sewerage that was sufficient for her size; had the system been enlarged and increased according to the growth of the city.

Hon. James A. Weston said he could bear testimony that the criticisms of Dr. Wilkins were just in a large measure, at the same time it would be well to remember that a child must creep before it can walk. Manchester, of course, like all cities, commenced in a small way. The first sewer in the city was built in Elm street, and had a capacity of eighteen inches in diameter. It was laid so near the surface of the ground that scarcely any of the basements could be drained into it. This sewer was of brick, and in the early days was the best and only sewer that Manchester possessed.

When Mayor Abbott was in office he took a comprehensive view of this question of sewerage. Against the remonstrances of many of his associates in the city council, he sent to Boston and employed the city engineer of that place to come to Manchester and indicate what was needed for a system of sewerage. This he did, and the work was done quite thoroughly and at considerable expense. When he became mayor he tried to carry out, as far as possible, the system that was recommended by the Boston engineer, but he was free to say now that that system was entirely inadequate. The sewers recommended were entirely too small. The sewer in Elm street was put in under this recommendation, except that it was eight inches larger than he recommended. If there were more inclination, which it was impossible to obtain under the circumstances, it would be ample for its purposes.

The Bridge-street sewer was built to relieve the Elm-street sewer. The original plan was to carry all the sewage to the south end of the city, but the sewers being found inadequate, this sewer down Bridge street was devised and the sewage emptied into the Merrimack River. This, it seems to me, was a very wise plan, and a very good sewer has been constructed, as I judge; but whether it is large enough is a question which would require some computation, and this I have not determined.

The object of the convention is to bring up these questions and discuss them in order that we may see how they can be improved upon. The cesspools of Manchester are very bad. Every citizen who has been abroad in the evening has had this demonstrated to him. At the same time it is well not to censure those who have preceded us too severely, because they had comparatively small means to work with. If we had not a sewer in town to-day, it would be a simple matter to introduce a first-rate system; as it is, we must patch up the old as best we may.

Ex-Mayor H. B. Putnam said: "Since the Bridge-street sewer has been referred to I will say that prior to my coming into office as mayor, all the sewers of Manchester entered the Elm-street sewer, and, as a result, in times of heavy rains the Elm-street sewer overflowed and the water backed up into the buildings. The first year that I was mayor I constructed the Bridge-street sewer from Canal to Elm street, which now carries off all the sewage north of Bridge street. Since that was built there has been no overflow."

Mr. Eben Ferren indorsed Mr. Putnam's remarks. He said there had been overflows before the Bridge-street sewer was constructed, but none since.

Mr. Huse inquired if Mr. Ferren had a trap in connection with the sewer in his buildings, as the law required, to prevent water and gas from flowing back.

Mr. Ferren replied that he had not. He had not been able to find out how to construct a trap that would let water out and not let it in again if it were forced back.

Mr. Huse said this led him to think of one defect that had not been touched upon in the essay of the afternoon. There had always been upon the statute books of the city a by-law or ordinance requiring all persons obtaining permission to enter a public sewer to put in a trap to prevent all water or gas from flowing back, but in comparatively few instances is this done. The greatest difficulty arises from individual carelessness rather than from corporate carelessness. It is not the efforts of the city that have given us these troubles, but the carelessness of individuals who, to save two dollars and a half, would refuse to put in these traps to prevent the water from flowing back or the gas from doing other injury.

Dr. E. B. Aldrich considered the paper read and the remarks made worthy the attention of the community. If there are dangers surrounding us, if there has been sickness caused by sanitary neglect, let us know how and where it is. He related several instances where he had found, in Manchester, sewer pipes in cellars open in several places so that they were simple avenues through which the sewer gas entered the houses. Speaking of the school system, he did not believe that any organ of the human body, whether in girl or boy, would be injured by going up stairs, but he did think that many children were made sick by the bad ventilation and heating of schoolhouses. Many rooms were heated so that the heads of the pupils were hot and their feet cold. A current of cold air was constantly circulating about the extremities and resulted in many cases of congestion. The temperature of the schoolroom should be equalized; the cold air should be taken from the floor and it should not be allowed to enter a schoolroom until it has been warmed. He believed in the theory of heated ventilating-flues.

Mr. S. D. Lord asked if the discussion in regard to schools had reference to the number of weeks or years that pupils attended school. He said that in Manchester they had thirty-six or thirty-seven weeks of schooling, and he presumed that in Bedford they might have twenty-five weeks.

Mr. S. W. Clarke said, that after having observed the schoolrooms very carefully, he had come to the conclusion that they were not properly ventilated, and in the several meetings of the school board had called the attention of the chairman of the committee on repairs to the matter. He thought if the matter were fully investigated, it would be found that ventilation has some connection with sickness in the schools.

Dr. Wilkins closed the debate by saying that he was exceedingly gratified in having presented a paper that had awakened some discussion. He had remarked in the beginning that he was not a civil engineer or a chemist, but he hoped some words had been spoken that would bear fruitage in the future. He felt a deep interest in Manchester, having studied medicine there more than thirty years ago. He described the manner in which consumption had been developed in animals, and considered that an impure atmosphere might lay the foundation for it in children. It is a fact that we are growing to be a nation of invalids, and our school system is one of the faults.

We are criticised in the English journals to-day because our insane asylums contain so many business men. Our school system begins it and the business life is well calculated to hasten the results. It is these unsanitary conditions in childhood that lay the foundation of disease. As to the sewers, he was very glad to hear them discussed. If the present system could not be improved, let us have a better. The sewer should be large enough to carry off the filth and there should be water enough to thoroughly flush the pipes.

DISINFECTION.

BY WILLIAM CHILD, M. D., NEW HAMPTON, N. H.

Practical sanitation may be divided into two parts: The removal of filth; and disinfection. They are of equal importance and are alike necessary to preventive medicine. Disinfection is the subject of this paper. Upon this subject there have been many disputes and doubts. Imaginary evils have been discussed and real evils have been exaggerated; measures and materials, drugs and chemicals, have attained high rank as disinfectants only to be degraded as useless and discarded as pernicious. Philanthropists and peculators produce an annual crop at a price per bottle that has not the value of as much soap and water. It has been difficult for even the most confiding and the most unskeptical to believe. Yet with all these assumptions there is a germ of truth. Progressive orthodoxy is now advocated. This means that one's orthodoxy shall be even with facts and careful deductions, therefore we claim to be orthodox on disinfection.

My introduction is chary and doubting, but I wish this paper to be a fair and candid consideration of the claims which disinfection, as it stands forth to-day, has upon the attention of thoughtful and practical men. In this consideration we have four inquiries: First, is there occasion for disinfection? Infection is the power which communicates disease. Disinfection is the process of destroying that power. If we have infection, or some power that may communicate disease, we have occasion for disinfection. If a city has danger of fire, then it has occasion for fire organizations and engines, and the urgency of such is in proportion to the danger, as indicated by the inflammability, proximity, height, and value of the buildings. So with our subject. If there be no infection, if there be no danger of communicating disease on account of this influence either in men or filthy matter, then certainly we have no need of any sanitary precautions. In fact, this is a most important and pertinent inquiry. If there be no infection, then we need no disinfection; if there be no sin, there is no call for salvation. If matter cannot become infected, why have sewers, night-carts, cesspools, or any other sanitary machinery? Thus the whole of sanitary science, the whole of preventive medicine rests upon this one fact. Physicians, sanitarians, and laymen cannot give too much attention to this, in all its phases, and in every possible light and shade.

That we may properly understand the nature and value of disinfection we must understand the nature and evil of infection. It is a mysterious influence, known by its effects rather than by any knowledge conveyed to our sight, taste, smell, or feeling. We know that the unprotected man comes in contact with a certain infection, and he invariably has the parent disease from which the infection was received. Infection from small-pox will not produce measles; measles will not produce whooping cough; that from cholera will not produce yellow fever, nor will that from plague produce anthrax. They are not interchangeable. They have general characteristics, but each has personal characteristics whereby they are easily recognized.

The infections of small-pox, yellow fever, cholera, typhus, typhoid, relapsing and splenic fevers, plague, anthrax, scarlet fever, diphtheria, measles, whooping cough, and syphilis have been the terror of men and the despair of physicians for ages. They have moved here and there over the earth, sometimes mildly, often furiously; sometimes they have touched lightly, again have depopulated whole States. Drugs do not cure, and rarely modify or abbreviate their diseases. Sometimes death comes almost instantly, and sometimes life is prolonged into a living death. Thus it is with the acute infections.

Again, there are infections outside the living body. They originate in putrefying animal and vegetable matter. They cause degeneration of the fluids and solids of the living body and impair the functions of all the organs, finally producing diseases characterized by different inflammations, purulent formations, and blood poisoning. This condition is best represented by diphtheria and erysipelas. These infections cause nausea, loss of appetite, coated tongue, languor, debility, chronic invalidism, boils, eruptions, carbuncles, mental weariness, and spiritual gloom. Bad air, damp cellars, uncleaned pig-pens, stables, privies, sinks and cesspools, imperfect drains, filthy yards, and water from unsanitary wells are usually the prolific sources of this infection. This infection renders those under its influence unable to recover from severe injury, surgical operations, and otherwise harmless diseases.

Again, a rare but more fearful and fatal infection is developed when dead, or decaying, and living animal tissues are in intimate connection. This seems to be developed in ways not fully understood. It is the most subtle and deadly poison known to man. It clings persistently to the walls, furniture, and bedding of hospitals. It cannot be detected by any human senses or by any known chemical tests. Yet there it is, ready to destroy any man with an open, absorbing surface upon his body.

Akin to this is the puerperal infection. It is the terror of obstetricians and women in child-bed. It is like an evil spirit hovering over the midwife who once comes within its influence. No glass, no balance, no chemical test can find it. The most delicate sense of taste, smell, or light cannot detect it, yet wherever that tainted midwife goes, professionally, there death follows.

Again, these infections may exist in all their virulence for months and years, and then when brought in contact with an unprotected person reproduce the parent disease as violently and fatally as if generated that day. A nurse may convey it in her clothing for miles and thus carry scarlet fever or diphtheria to an unprotected child. These infections may, in trunks of clothing, bales of rags, or boxes of merchandise, be conveyed around the globe and there reproduce a new epidemic.

They have another unpleasant habit, — that is, they find their way into drains, sewers, cesspools, privy-vaults, stagnant water, there living, propagating, swarming, and escaping to again reproduce their parent diseases among men.

There is another wonderful and suggestive fact connected with these infections. A particle of matter bearing some of these infections may be placed in a properly prepared fluid or jelly, and there cultivated. There they live, reproducing their kind for any number of generations. Then, after a score of removes, a minute quantity may be introduced into a perfectly healthy subject, and there produce exactly the same fever as that going on in the patient from whom was taken the remote ancestor spore or germ.

Now, these diseases, from each of these infections, have an identity as true to their class as have trees and plants. Their natural history is as well known and their presence as easily recognized. Also, each is the result of a given infection as much as the oak is the growth of an acorn, for the law of like producing like is positive even in disease. The infection of small-pox will never produce plague, measles will never produce whooping-cough, nor will that of cholera bring yellow fever, nor diphtheria scarlet fever, nor typhoid fever produce splenic fever. Therefore, these infections are real personalities, to be pursued, found out, fought, and destroyed, as much as any other pest or enemy of mankind. They cannot be charmed away, nor prayed away, nor driven away by any spiritual flummeries, nor rendered an imaginary quantity by the mental concentration of Christian Science. They are things of the great Creator, existing according to fixed laws, living or dying according to certain causes and conditions as much as man himself. Civilization is but the subjection of matter to comfort, pleasure, profit, and the general welfare of man. Beyond a doubt, civilization will subdue, perhaps annihilate, all these infections.

These facts concerning infection are mentioned that we may know of its nature. Otherwise, we cannot understand the nature and necessity of disinfection. To know the position, number, habits, lurking places, and power of these enemies of human health, comfort, wealth, and life, is to know how to fight and destroy them.

We have now arrived at the real point of this paper, — that is, a consideration of the use and practical value of disinfection. The American Public Health Association is a valuable institution. It has issued a report on disinfectants, under the supervision of Dr. George M. Sternberg, the distinguished American biologist. This report is based upon the most extensive, most carefully conducted, most intelligently observed series of experiments ever made upon this subject. It is clear, compact, positive, practical, and conclusive. It will be our authority for many years, perhaps for all time, upon this subject. Every American should be proud of this association, and should possess this report. It is wholly a volunteer association, and its report upon disinfection is interesting and even fascinating, though most strictly scientific.

Now, then, infection being as described, its home and habits being known, and its power being a constant menace to men, there is a demand upon science that this power be avoided, neutralized, or destroyed by means of agents of reasonable cost, convenience, and safety.

Science advances by graded steps; only thus are her works and conclusions perfected and comprehended. So it has been here. Men have long seen the necessity and possibility of disinfection. Only as the nature of infection became more fully known did real disinfection become a realized fact, and become reduced to a practical system. Many sanitarians believe that, practically, all contagions and infectious diseases will disappear. Now, this end has been shown to be among the possibilities by the labors of the above-mentioned association, and by their servant, Dr. Sternberg; but this cannot be accomplished excepting by the most hearty and intelligent co-operation of every medical association, municipal corporation, and every householder in the land.

This brings us to another question, How can we advance practical sanitation? I do not intend to give recipes and the sanitary details, because these have already been published and widely scattered; but I will suggest some points of an exhortatory character rather than scientific:

1. Never neglect an opportunity of gaining information upon sanitary matters. Even the slightest fact may be of immense value. Sanitation is much like the revolver to a citizen of Texas, — when you need it you need it awfully.

2. Have your home on elevated, dry land, and well above the surface; if not perfectly dry by nature have it so by art; if in a country place, never have the drain below the ground, in the city it must be; have your house and surroundings perfectly clean. This does not mean merely to scrub your sidewalk and polish your front door, stuff your parlor with stuffy furniture, and cover your sleeping and living rooms with dust-gathering carpets, scrub your kitchen floor, and hang curtains over all your windows night and day, but it does mean that dirt and waste of all kinds should be removed far away from where you and your family live. Dig out the cracks and corners about your kitchen sink, chambers, drains, cesspools, and privy-vaults. In hot seasons very little filth will ferment or putrefy and may do evil; don't scrub the kitchen floor until you have cleaned the little holes about every kitchen that always are moist and impure. Keep all these little corners dry. Ventilate most thoroughly and

often; admit the sunlight at all seasons to every room where you are to do or die for a lifetime. Have your stable as far away as possible; be sure all your drain-pipes are perfect; have your privy-vaults cleaned often, and so covered with dry earth and chloride of lime as to keep their contents dry. Always keep your house cool in summer, warm in winter, and at all times dry. This is a point little considered; but a dry atmosphere renders heat and cold more tolerable, and surely more healthy. A moist house is usually — always — a chilly and moldy one. A house should be so dry from the cellar bottom to the last brick on the chimney that mold cannot exist. These precautionary sanitary means will render any dwelling suitable for human habitation.

In such a dwelling there is usually no occasion for disinfectants. Yet even here certain precautionary disinfection may be employed in summer, such as sulphate of iron in large quantities thrown upon privy, stable, and wash-room floors; chloride of lime in every suspicious place; slaked lime in moist corners about water-tanks, underneath wash-sinks, in old cupboards, water-closets, and wash-rooms. But I would not use in a house of good sanitary condition the more active and real disinfectants only in time of prevailing epidemic or during sickness in the house from contagious or infectious diseases. As drugs to a well man are unnecessary so are disinfectants in a sanitary house. You remember the words on the tombstone of a man who took drugs as a precaution, "I was well and wished to be better, took drugs, and here I am." But during prevailing epidemics, or when infection is in the house, then we need to use disinfectants without stint and with a certainty of their necessity and of their practical value. No householder, no physician, would be without blame should he neglect such precautions.

In New Hampshire the diseases needing disinfection are diphtheria, scarlet fever, typhoid fever, and tuberculosis.

Diphtheria gives off infection from the affected surfaces, probably not from the general surface. Children are more susceptible than adults. The poison is thought capable of increase outside the living body, in damp places, as sewers, moist cellars, and under old houses. Some houses can never be disinfected from this infection. The well should avoid such cases only as necessary. Kissing the infected should not be allowed. Some very kind people will kiss and fondle a child with diphtheria, then go to a house with healthy children, there doing the same kind act, and convey this awful disease.

Scarlet fever has infection thrown off from the body. The disease may be communicated during the time of illness and convalescence. The poison is very active, and may be preserved in clothing for months. Adults are less susceptible than children, yet those having to come in contact with well children should avoid those sick with scarlet fever.

Typhoid fever has its poison generated in the intestinal canal and is found in the discharges therefrom. These may and do often find their way to wells and reservoirs for drinking, also into milk when the cans are washed in infected water.

Tubercular consumption is believed to be an infectious disease. The matter coughed up is the infectious material.

Now in all these use liberally such disinfectants as may be ordered by your physician. I might give minute directions here, but there are many and complete directions furnished by our Boards of Health to which you can make application. The end of this paper is to direct your attention to the importance of this subject. Details you may obtain from other sources.

Mr. President, I have presented the best part of this subject in the space and time allotted to me. The possibilities are immense. On the one hand, if we should return to the filthy and careless life of the middle ages, you know that the fearful epidemics of then would be repeated now. And, too, it might be possible, even probable, that your young giant city would be visited; and if so, you know that your great water-wheels would cease to rumble; your looms would cease to clatter; your hammers would cease to clamor; your grand canal would run pollution more harmful than dye-house refuse; and your present inflow of wealth and population would seek other regions. On the other hand, if you adopt all the sanitary regulations of modern times, you know that your sick-list and deaths will diminish to the lowest average; the dye-house refuse may still kill the fish in the Merrimack, yet peace and plenty will prevail within your borders, and you can still furnish the world with a yard of cotton cloth or a fifty-ton locomotive.

I thank you for your attention and invitation to take part in this convention. I only regret that I could not treat the subject of my paper with the ability it really demands.

HOW CAN THE MORTALITY OF CONSUMPTION BE REDUCED?

BY JOHN J. BERRY, M. D., OF PORTSMOUTH, N. H.

To impart information upon matters pertaining to the public health is to all of us a pleasing duty, but to appear before this convention and with rules for the limitation of a fatal and almost universal disease is to enjoy a twofold honor.

Consumption is one of the greatest evils of our New England life. It is responsible for fifteen per cent of all recorded deaths. Of the 750,000 from specified causes, reported during the last census year as occurring in the United States, more than 100,000 were from this disease. During the year 1885, 868 deaths in the State of New Hampshire may be placed to its credit. In this city of Manchester, it added 117 names to the death-roll of the same year, and in some of the neighboring cities the ratio was even greater than this. It is a disease which is insidious in its onset, wearisome in its progress, and deadly in its results. It lays its hand upon the young rather than the old, as well as upon those whose loss seems irreparable. It stays without discrimination and, as sure as the seasons come and go, some of the fairest and the best of our communities go down before the sickle of the Reaper. Yet, strange to remark, the disease is regarded by many with feelings of indifference as well as apprehension. Some have acquired the conviction that by adopting certain habits of dress or conforming to a few fixed rules of living they have complied with all the essentials of health, and that death cannot come nigh them. Others there are, whose lives are one constant invitation to disease. Living under conditions which, from a sanitary standpoint, are anything but perfect, the devotees of habits which tend to lower vitality and disarrange the functions of waste and repair, disregarding persistently all the laws of the physical world, they go their way and think not of the retribution which pursues them. To such as these it is hoped that the precepts and warnings of science will point a moral and furnish forcible suggestions.

From this paper, then, I shall endeavor to omit all impracticable rules and purely medical advice for the prevention of lung diseases, considering it of far greater importance that the public should know wherein their greatest dangers in this respect do lie, and that they should form intelligent and practical ideas of the many and, I could almost add, infallible rules for avoiding them. In doing this, I shall make little attempt at originality, which from the nature of the subject is impossible, but shall offer simply a *resumé* of the mature convictions of the sanitarians of the present time. A most erroneous impression and one adverse to sanitary reform and advancement is that consumption is invariably a hereditary disease,— that the children of phthisical parents are predestined to die of a like affection and, consequently, that preventive measures are of little avail. This view, in some of its modifications, has been entertained for generations, and has been quoted among those mysterious and impressive workings of Providence to which we should bow in submission, and whose chastisement we should receive with the cheerfulness of the fatalist. The outcome of scientific investigation, however, is a more satisfactory view of the subject. From it we have learned that seventy-five per cent of all cases originate in the patients themselves; that only twenty-five out of every hundred can be traced to hereditary influences.

It being admitted, then, that in a large proportion of cases the disease is an invited one the questions will be asked, What are the common causes of consumption? and are these causes avoidable?

In reply, let us turn our attention for a moment to the location of the affection. In no way is such a vast and important influence exerted upon the vital processes as by the respiratory organs. Upon them depends to a great extent the activity of other portions of the body. It is here that occur the processes of oxidation and the elimination of a portion of the waste products; without such action, there is no heat, no motion, and none of those molecular changes which regulate the growth and renewal of the bodily structures. Under the influence of a large supply of oxygen the lungs increase in capacity, the muscles everywhere become stronger and better developed, the nervous system responds more readily and effectively to the calls made upon it, digestion improves, and everywhere are there noticed changes which promote health and longevity. When, as it often happens, too little air is inspired and oxidation is imperfect, the fact is at once apparent, as the very opposite conditions prevail. The individual becomes debilitated, and both physically and mentally unfit for prolonged exertion. The vital processes being thus at a low ebb, he is as liable to suffer from disease as his counterpart is to escape it. There are, no doubt, many cases of consumption which are the direct result of deficient oxidation. This fact was long ago demonstrated by Balfour* who, in his examinations of over 1,100 recruits in the British army, found that four times as many were disabled whose lung capacity was below par. Hutchinson,† an English writer, demonstrated by numerous observations upon the respirations, that in a healthy person there is a certain minimum of vital capacity consistent with health. This minimum certain individuals were unable to attain, but fell considerably below the mark, and such persons, although no disease could be at the time detected, subsequently died of consumption. There are, then, two indications to be met, — either a full amount of good air must be obtained or the limited quantity secured must possess a high degree of purity. The amount of air passing in and out of the lungs at each inspiration is about twenty-five cubic inches, but there are many who, by assuming a constrained position, or engaging in occupations which require no muscular effort, or by wearing articles of clothing which limit the movements of the chest, inspire only a few cubic inches and use only the upper portions of the lungs. It is stated that not more than ten per cent of children use their respiratory organs properly. Now, upon estimating the amount of work which the lungs may be called upon to perform, the contrast is striking, for by a forced inspiration we may easily take in 100 cubic inches and this capacity may be greatly increased by proper training. It will thus be apparent how little we tax these organs and how little we do toward securing the proper oxidation of the blood.

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* Medico-Chirurgical Trans., 1860.

† Ruehle. Ziemssen's Cyclopedia.

It is a physiological law that due and moderate activity of an organ increases its development and preserves its integrity, while non-use, as well as overwork, has a directly opposite effect. This is an important principle for consideration in our methods for the prevention of lung diseases. How we secure this increase of capacity matters little, yet have it we must in every individual who seeks immunity from the disease. The fact that those pursuing vocations which call for a considerable amount of exercise on the part of the lungs are notoriously free from consumption has lately been utilized by the employment of several systems of muscular exercise and various kinds of gymnastic apparatus which have for their chief object the increase of chest capacity and the development of the respiratory muscles. That they are effective in these particulars there is no lack of confirmatory evidence. We are justified, then, in stating that such measures, when employed under proper conditions, are most excellent preventives and constitute a resource which even the healthy can ill afford to disregard. It is a gratifying fact to note in this connection that more than fifty of our institutions of learning have acknowledged the value of these preventive measures by inaugurating various systems of physical culture and making their practice compulsory. In connection with the subject of respiration I would call attention to the harmfulness of the practice known as "mouth breathing." The inspired air should never enter the lungs in this way, but invariably through the nasal passages, for while passing through these channels it is warmed and deprived, to a great extent, of its many impurities, and by being more slowly admitted into the lungs is rendered more fit for absorption into the circulation. On the other hand, the direct inhalation of large draughts of chilled air has been attended by severe and even fatal results.

Of no less importance to the proper integrity of the respiratory tract is the condition of the air we breathe. To some, fresh air is a novelty. There exists a large number of persons whose out-of-door existence is less than one hour a day, and there are some whose lives are passed almost wholly within their homes and to whom pure air is little more than a weekly luxury. I have presumed that all indoor air is bad, for the reason that not one dwelling in ten is perfect from a sanitary standpoint. Either the breathing space is too limited, or ventilation is imperfect, or the internal and domestic arrangements are improper. When it is considered that the ordinary adult requires over three hundred cubic feet of air in the twenty-four hours, and that each expiration contains four per cent of its volume of carbonic acid gas, or, according to Lavoisier, six hundred and thirty-six grains an hour, the amount of space which health demands for the individual will be at once appreciated. When it is not obtained the disease and death-rates begin at once to increase. The Grotta del Cane in Naples derives its name from the fact that a dog held over the mouth of the cavern becomes at once unconscious from the excess of carbonic acid gas. The very same phenomenon, but in a minor degree, occurs to persons living constantly in a contaminated atmosphere. If the proportion of the gas be large, it sinks by reason of its density to the lower strata, and the one breathing it becomes faint and dizzy. If the amount be less, the results are those of insufficient oxidation, combined with those of impaired nutrition. In the report of the registrar-general of England it is stated that in cases where the allowance of air-space was three hundred and thirty cubic feet per capita, the percentage of consumption was about thirteen, while in other portions of the army where men were given seven hundred cubic feet, the rate was only about six per cent. Facts such as these are more eloquent than arguments can ever be made.

Prof. Hind, in his work on Labrador, observes that consumption "is almost unknown to the inhabitants living in the fastnesses of that desolate region in tents made of spruce branches, lined with skins, and more or less exposed, but when these natives come down to the St. Lawrence to take part in the fisheries, and occupy well-built houses, and live in comparative luxury, in the course of a year or two they become consumptive and die miserably." The observations of Rohe * upon a hun-

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* Hygiene of Occupations, 1885.

dred and forty-five thousand persons who had died in the State of Massachusetts elicit the fact that those occupied in the cultivation of the soil lived from five to twenty years longer than those pursuing other vocations. To this may be added the statement that two thirds of the deaths from consumption occur in the cities and larger towns. The history of the disease, in short, abounds in illustrations of the importance of a pure atmosphere, and the value of outdoor life as prophylactic measures.

To enter into a discussion of the proper construction of dwellings would be to trespass upon the field of the architect, yet the subject has such a direct and important bearing upon the welfare of the people that its brief consideration may be excusable. Faults of construction are to be found in the dwellings of the rich and poor alike, though in the case of the latter the evil is more likely to be that of overcrowding, and the consequent limitation of air-space, than a faulty method of ventilation. The existing causes may vary in character, yet they produce identical results. One of the first to call attention to the effects of moisture and damp dwelling-sites upon the causation of consumption was Bowditch of Boston, who found that out of two hundred and one of his own cases over one half resided upon damp soil. A sanitary inspection of one hundred and eighty-three townships in which consumption was rife showed that three fourths were damp.* This report is supplemented by Buchanan † in a series of observations, embracing twenty-five towns in Great Britain, and comprising over six hundred thousand inhabitants, in which after systems of drainage had been put in operation the mortality of the disease was markedly diminished. A like conclusion was reached by Latham ‡ as the result of a similar work in twelve towns, the average reduction of phthisis being thirty per cent. The personal experience of Bowditch, together with that of various other investigators, led him to remark that " a residence on or near a damp soil, whether that dampness be inherent in the soil itself or caused by percolation from adjacent ponds, rivers, or marshes, is one of the primal causes of consumption in Massachusetts, probably in New England, and possibly in other parts of the world," a statement whose truth is being daily demonstrated by sanitarians in all countries. The dwelling-house should then possess certain definite requirements, the nature of which has been often quoted.

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* Sanitary Condition of Boston, 1875.

† Tenth Report of the Medical Officer of Privy Council, London, 1868.

‡ Sanitary Engineering, London, 1873.

1. It should have no facilities for retaining particles of dust or the germs of disease.
2. It should possess every facility for the removal of impurities.
3. It should be free from dampness.
4. It should be furnished with an abundance of sunlight and a constantly changing current of pure air, maintained at an even temperature.*

Wherever commercial or manufacturing interests are concerned, the proper care of the occupants of offices and workshops becomes a most important duty. The vast number of those employed wholly within doors, occupying constrained positions for hours at a time, breathing vitiated air, confined in insufficiently heated or overheated apartments, exposed to draughts, and, in short, passing a large portion of their lives under conditions which tend to impair their physical status as well as to shorten their lives, renders it urgently necessary that not only workmen should be aware of the disadvantages under which they labor, but that architects, capitalists, and contractors should be forced to take in behalf of their employés the necessary sanitary precautions. That these conditions have been in the past, and are in the present, fruitful causes of lung disease has been forcibly shown by Hirt,† Boudin, Rohe,‡ and others. There are some trades and occupations which are almost suicidal in their effects. Among the Sheffield and similar industries, in which the operatives habitually inhale air which is charged with particles of mineral dust the average duration of life is from twenty-nine to thirty-five years.

Seventy needle polishers out of every one hundred who are sick die of consumption, and nearly every grindstone-maker suffers from the disease at an early period of life. The same is true of workmen who inhale vegetable impurities. Three fifths of those working in the flax mills of Belfast, Ireland, die of the disease. According-ing to Stickler,* sixty-six per cent of all the deaths occurring among operatives in the hat shops of New Jersey are due to this same cause, while in some departments of the trade the ratio rises even to eighty-two per cent. These are but a few of the many examples of the effect of inhalation of foreign particles upon the causation of the malady, yet they are sufficient to show that laborers in workshops are subjected to a double danger, that is, exposure during working hours to a dust-laden atmosphere, and the breathing of vitiated air in their own homes. So long, however, as capitalists are determined to confine the costs of production to the lowest possible figure and so long as they fail to appreciate the fact that sanitary precautions invariably pay high dividends, such reforms will be difficult to inaugurate and we shall be obliged to depend upon legislation to secure the wished-for results.

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* Relation of State Medicine to the Profession of Architecture, De Wolf, 1886.

† Krankheiten der Arbiter.

‡ Traité de Geographie et de Statistiques Medicales, Paris, 1868, Vol. I.-II.

As the characteristics of a people or nation are molded and modified by their physical surroundings, so the health of the individual and the character of his disease are determined by the locality in which he lives. Some are noted for the number of their consumptive inhabitants, while others enjoy a wide reputation for salubrity. According to Mühry,† the Sahara and portions of Central Asia are entirely free from it, while it exists in an exceedingly small ratio in Malta, Egypt, the Azores, the Canary Isles, portions of Peru and countries where the climate is equable and dry, and where a high altitude and rare atmosphere necessitate deep inspirations. It is generally conceded that a country or region having these characteristics is the best resort for those threatened with the disease, though so varied are the requirements of invalids that no inflexible rule can be formulated. There are localities in our own as well as in other States where the death-rate is comparatively small, so that it is often possible for the consumptive to select a dwelling-place without a great sacrifice of personal interests. Those then who occupy houses whose elevation is high, — which are situated on the southern or western exposure of mountains, and are thereby protected from bleak winds and a moist soil and atmosphere,— and which are well drained and ventilated, are promised a much longer lease of life than are those whose surroundings are not so well chosen.

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* Hatters Consumption, 1886.

† Klimatologishe Untersuchungen.

The infectious nature of consumption, that is, the possibility of communicating the disease to a healthy person through various media, requires that precautionary measures should be exercised in this particular also. The theory of infection was first broached over 200 years ago, but its truth and importance were not recognized until Villemin* in 1865 demonstrated that tuberculosis was inoculable. From that time forward, experimentation has been universal, and the fact has been demonstrated that it may not only be transmitted from a healthy to a diseased animal by the inhalation of a tuberculous atmosphere, but that it may be produced in man, both in this way, and by the ingestion of the flesh and the milk of infected animals. As it has been estimated that from five to ten per cent of the cattle brought to our markets are tuberculous, and as it is oftentimes impossible by a cursory examination to detect the existence of the disease, it is important that the dangers from such a source should be thoroughly understood and appreciated. It is held by Gerlach and others equally eminent, that the milk of diseased animals is even more to be dreaded than meat, though both of these contain the specific poison which can be readily transmitted in various ways, and which is little affected by cooking or other prophylactic measures.

In our larger towns and cities the source of the milk supply is only a matter of speculation and we are obliged to rely for its good quality upon the skill and honesty of the dealer, which are not invariably beyond suspicion. As it is for a time the sole nutriment of our children and a food which is daily being used more generally by infants, it is important that its purity should be protected by the most careful sanitary inspection and the most rigid system of surveillance.

Although it was stated many years ago that infection was one of the most common causes of consumption, it remained for the German scientist, Koch, † to demonstrate the existence of a specific germ of tuberculosis, which presented certain well-marked and definite characteristics, — which could be separated from the media in which it was found, and which, when introduced into the system, produced the same conditions of which it was the result. Upon the demonstration of this, there followed other experiments which rendered it more than probable that a consumptive person may, through a common atmosphere, infect those with whom he has been intimately associated. The hygienic management of such persons should then consist of effective measures of disinfection and their isolation, as much as possible, from relatives and friends.

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* Etudes sur la tuberculose, Paris, 1868.

† Berliner Klinische Wochenschrift, 1882.

The greater portion of the body heat is the result of oxidation and other chemical changes at work within. Whenever there is deficient lung expansion, the body is cold and the individual attempts to relieve the condition by surrounding himself with more heat, forgetting that the skin absorbs little if any, but, on the contrary, gives off two thirds of all that is lost by the body, and that the chief office of a high temperature is merely to check this elimination. In the matter of clothing, then, we may attain two extremes. The person who is clad in thin, cotton garments which allow the ready transmission of heat from within and cold from without, is always exposed to the sudden variations of temperature, and the internal organs are being constantly pushed to make up the balance which is lost. On the other hand, when the surface is covered with very thick or impervious clothing, such as kid, buckskin, india rubber and the like, which check the secretions and load the surface with moisture, an undue amount of work is forced upon the internal organs, and congestion and disease result. In all variable climates, therefore, the body should be protected both summer and winter by a good non-conductor, of which flannel is the very best, and the variation should be only as regards thickness, and no social custom or freak of fashion should allow exposure of the chest or extremities, which, as every thinking person will admit, should be particularly well protected.

There are no specific rules of diet to be given for the prevention of phthisis. The different habits and conditions of life render their requirements varied both in nature and degree. After the period of childhood there is no variety of food or system of nourishment which is of general utility. Food not only assists in supplying heat, but furnishes the various tissues with their proper nutriment. It should, therefore, contain all the chemical elements of which the body is composed. The fats, the albuminoids, the starches, and the mineral elements, which, as concern lung disease, I have noted in the order of their value, have each their important office in the economy and should invariably be supplied in their proper proportions. *Consumption is pre-eminently a disease of malnutrition*, and in this disease, as well as in many others, it should be remembered that a very great number die of starvation. The individual either fails to take the requisite amount of food, or else that which he receives is not properly assimilated. Regarding the choice of foods and their preparation for the table there is much, therefore, to be learned and practiced. They cannot be nutritious unless they be rendered digestible, and even then their object is not fully attained unless the processes of oxidation and elimination be in active operation.

These phenomena, however, depend to such a great extent upon the condition of the nervous system that any treatment or medication which ignores the same must fall short of success. So familiar to you are the reciprocal effects of mind and matter that it is needless to quote from the great mass of testimony at our disposal, which shows that not only may the process of repair be set at work and furthered through mental channels, but that a profound shock or nervous impression may at times arrest degenerative changes and mark a favorable crisis in the history of a given disease. Physical and mental nutrition and development should, therefore, go hand in hand. The highest type of culture is a general culture, and the best product of education is a harmonious development of all organs and tissues of the body.

Although the use of alcohol has little, if any, direct influence upon the causation of consumption, yet it has an important bearing upon the subject, inasmuch as it lowers the sanitary status of the family. The tendency of intemperance is towards pauperism, with the attendant evils of poor and insufficient food, squalid dwellings, and the other conditions which go to impair health and nutrition, not only of the individual at fault, but of those dependent upon him. The excessive use of tobacco may have both a local effect upon the bronchial tubes and air-cells of the lungs and a general effect upon the organs of digestion and assimilation through the agency of the nervous system. The literature of the day offers, however, so much testimony of its ill effects upon young persons that it remains for me only to state that to such the dangers are greater and of a more varied character.

I have already stated that three fourths of our cases of consumption were acquired. There remain, consequently, twenty-five per cent in which the disease is of hereditary origin. The inquiry will then be made whether the same rules of prevention are applicable to the latter class, and whether those whose parents are consumptive necessarily inherit their affliction. To these queries we may give a most encouraging reply. In only a small percentage of cases need this law of inheritance hold good, and nowhere are the results of physical education more satisfactory and more susceptible of demonstration; for there is abundant evidence to show that an individual, all of whose family are consumptive, may often, by a firm determination to escape the disease and by a careful attention to preventive measures, outlive and subdue his inherited tendency, and finally die of old age or some other disease.

As neuralgia is the prayer of the nerve for healthy blood, so consumption is a demand on the part of the system for nutriment for its tissues, and the various measures of prevention which I have suggested have but this one object in view, — the replacement of a healthy for an impaired structure and the maintenance of the same in a state of integrity. The common experience that those who are constantly exposed to danger become oblivious to it finds a parallel in the natural history of consumption. Your parents, your brothers, and your sisters may have in turn succumbed to the affection, yet you are not sufficiently impressed to consider these measures. You follow the same occupations and habits of life, live in the same localities, and expose yourselves to the very same conditions, without realizing that by a radical change in these particulars you may escape their fate. As the greatest mortality is found between the ages of twenty and forty years, and as the germs of the disease are often implanted during the period of growth and development, a word to you as parents also seems to be urgently demanded. You can bequeath no better heritage to your children than a healthy organization.

To such as possess it all things are possible and opportunities are limitless. To those who lack it, exertion is irksome and labor is performed under difficulties which neither wealth, nor position, nor anything else can fully overcome. Whoever marks out a career for his son invariably surrounds him with dangers which are peculiar to his occupation, and which should be thoroughly and effectively guarded against. Whoever allows his daughter to pass two thirds of her time in close, ill-ventilated rooms, or many hours a day before the desk, the piano, the easel, or in any other similar occupation, places her under the best possible conditions for acquiring lung disease, and otherwise does her an injury whose effects she will most likely experience in after years. It is your urgent duty, on the contrary, to see that at least one third of the waking hours be spent in proper physical exercise, and that no fancied duties should prevent the systematic practice of this habit. As the Christian life is a constant warfare against sin, so the physical life is a fierce and continuous struggle against disease, the taints of inheritance, and conditions of environment, which compass it about on every side, and await only an opportunity to accomplish their work. In the race for health and longevity a few attain the desired goal, but many more there are — the weak, the ignorant, the wrongly educated — who drop out of the ranks and perish by the wayside.

It is for you to say how great this latter proportion shall be, and you will dishonor your stewardship when you indorse any system of education which ignores physical development, or when you fail to supply your children with all the sanitary requirements for future health and prosperity. Never in the history of our race were the physical needs of our people more urgent than at the present time. For many years there has been a progressive physical degeneration of the American family in New England, — a condition with which the imperfect appreciation of our real needs has had much to do. We have reason to believe, however, that through the example and teachings of the German people, and the exertions of our own sanitarians, we are approaching an era of reform, and it remains only to trust that the germs of truth, which have been so widely sown, will soon yield to humanity a productive harvest.

ABSTRACT OF DISCUSSION.

Colonel Marvin asked if Dr. Berry would recommend medical supervision of schools.

Dr. Berry replied that he would certainly recommend it during the period of growth and would have the health of the pupils under constant supervision. He would also recommend that physical culture be made obligatory in every case.

BURIAL *vs.* INCINERATION.

BY D. M. CURRIER, M. D., NEWPORT.

The subject of the disposal of the dead has occupied the attention of the living from time immemorial. The first death presented a problem for the living to solve which has not yet been fully settled for the best interest of mankind. In the earliest record we have, the dead were placed in caves and natural excavations of the earth, which probably suggested the idea of tombs excavated by hand in the solid rock. Later on, the same thing was modified by the erection of tombs from detached pieces of rock bound together and retained in place by different kinds of cement, of which the pyramids of Egypt stand as the highest exponent.

The usual method of disposing of the dead since civil history began is to bury them in the earth. Among sanitarians and scientists this for a long time has been considered a dangerous procedure to the living, but since the germ theory of disease has been investigated, new light has been thrown on the subject which presents it as doubly dangerous. The telescope has revealed wonderful things in the starry orbs of heaven, and defined our relationship and influence upon other worlds and other systems. On the other hand, the microscope has revealed our relationship to the world of infinitesimal beings beneath us. It has demonstrated to us the fact that millions of living things, too minute for the unaided eye of man to ever discover, are in the air we breathe, the food we eat, and the water we drink. Some of these, to be sure, are entirely harmless, while others are the important factors in disease and death. These germs are very tenacious of life, living and propagating their kind under the most adverse circumstances, changing their nature and their power for harm to the human system according to the conditions under which they are placed. It is as fully demonstrated as anything can be, and a fact fully accepted by the medical profession, that the essential principle of all contagious diseases, such as measles, diphtheria, scarlatina, typhoid fever, cholera, yellow fever, and small-pox, is a living germ capable of indefinite multiplication and retaining its potency under the most diverse conditions.

Pasteur, in his investigation into the cause and prevention of splenic fever in cattle and sheep, proved that the disease could be spread among the flock by the living eating the grass over the graves of those that had died of the disease, even after they had been buried for years, and to prevent the spread of the disease caused the graves to be fenced off. The reason of this was because he found the peculiar germs of splenic fever on the surface of the ground and on the grass over the graves even when the bodies had been buried to the depth of six feet, they having found their way to the surface through that amount of earth.

The chrysalis of the butterfly will resist the most intense cold suspended in its cocoon from some twig. No poisonous mineral or deadly fluid has the least impression upon it. Nothing but fire will harm it. So in the larval state of these germs they are proof against the most powerful germicides. Nothing but extreme heat is sure to destroy them.

Thus we are brought to the question, Is it better to bury the dead bodies of those who were obliged to move out of their frail tenement of clay by reason of the invasion of an armed host of these destroying germs, than to reduce them rapidly to mother dust by incineration, and by this means destroy the destroyer? "In earth-burial we are storing up vast magazines of these germs, which at the favorable moment are ready to again attack the living through the medium of earth, air, and water. That they will live hundreds of years was proved by the outbreak of cholera in London in 1854, the virulence of which was greatly aggravated by cutting a viaduct through an old burial ground; and also by the plague in Modena in 1828, which resulted from disturbing the ground where the victims of the plague had been buried three hundred years before." Did it ever occur to you that some mysterious outbreak of disease might have been the result of some visit or tender ministration at the abode of the dead?

Millions of dollars have been expended in cemeteries. "Many of them are beautiful and park-like without, but within are 'full of rottenness and dead men's bones.'" I do not deprecate that beautiful sentiment which prompts civilized man to decorate and embellish the last resting-place of the loved dead, but that sentiment can find its fullest expression in the decoration, costliness, and place of deposit of the incinerary urn.

Nature practises the strictest economy in all her operations. She does not let the material of which our bodies are composed lie useless for endless ages, undisturbed and unappropriated. She has used it over and over again in the past, and we have only received it second hand from some other form of life, — it may have been from the rude Indian of the forest, or the fair-haired prattling child of the white man, or more direct still, from the slaughtered kine.

"Life evermore is fed by death,
In earth, in sea, and sky;
And that a rose may breathe its breath,
Something must die."

And at our death our bodies, guard them as we may, will be resolved into their ultimate elements, to be taken up again by other forms of life, perhaps first by the vegetable, then by the animal, and so on to the human again. You have probably all read of the fate of Roger Williams. The only way to thwart in a measure this rapaciousness of nature is to insert a clause in our wills instructing our friends to preserve all of the non-volatile portion of our bodies in the incinerary urn.

The decree that "dust thou art and unto dust shalt thou return," has never been revoked, and the ultimate result is the same whether it is done quickly, cleanly, in the retort of the crematorium, or more slowly in the filth and corruption of the grave, amidst crawling worms and unsightly putrescence, in the one case with safety to the living, in the other, with danger of contaminating the earth, air, and water, to the detriment of the living. In the process of incineration there is nothing that need to shock the sensibilities of the most refined. No odor of any kind is perceived, as all volatile matter is conducted through the furnace and perfectly oxidized before escaping to the outer air, and what remains is the non-volatile portion, perfectly pure and clean, and possessing a considerable degree of whiteness, and amounting to about four per cent of the original weight of the body. On the score of cheapness it is much to be preferred. At the present time it costs but three dollars to incinerate a body in France. In this country the cost is estimated at five to six dollars, whereas a decent burial would cost several times that amount.

Many have a sickening horror of being buried alive. To those the advent of cremation will be hailed with joy, and they will probably even have courage to die if assured that their bodies in the act of incineration will be removed to a lower temperature and more congenial atmosphere upon the least sign of returning life.

Do I hear some one say this is a relic of barbarism? So are many of the customs of to-day. The fashion of wearing black as a sign of mourning for lost friends is a heathen custom, and the early Christians ignored it on that account. The ancient Hindoo was indeed doing better sanitary work than he knew when he applied the torch to the funeral pile of the dead. If only the living widow had been left out, the arrangement would have been more perfect.

But it is not to be confounded with the offensive custom of burning on the open pyre as practised by the ancients and even by the moderns in India and Japan, a custom only less appalling than earth-burial itself. Cremation is effected in a superheated air chamber, which allows no contact of flame or fuel with the body, while, as we have just said, all the gases and volatile products of combustion are completely regenerated and rendered innocuous and odorless before being liberated. An approved modern crematory might be erected in one of the beautiful parks of your city, and but for transporting the bodies thither could not be offensive to any one. The process is accompanied with no repulsive sight, or sound, or smell, no noise, or smoke, absolutely nothing that can offend the most delicately sensitive.

You may say it will furnish an incentive to crime, that the murderer has frequently attempted to burn the body of his victim to destroy the evidence of his guilt. This, then, would incite to greater precaution as to the cause of death, which is greatly needed for the perfection and usefulness of our vital statistics. Two reputable physicians should certify to its cause, and where there is the least doubt a post mortem examination should be made. "Death from the effects of minerals and mineral acids are easily detected, and the proofs can always be discovered in the ashes if necessary. The detection of the poisonous alkaloids would be more difficult, but more stringent laws could be enacted and enforced to prevent their sale. The symptoms of poisoning by opium, strychnia, and aconite are so striking and so well known that they could not be readily overlooked by two medical men. The custom of embalming a dead body by intravenous injections of mineral solutions, now so generally in vogue, destroys all evidence of poisoning, yet no one objects to it on precautionary grounds."

We are sometimes almost staggered when we see in figures the population of the earth, but

> "All that tread
> The globe are but a handful to the tribes
> That slumber in its bosom."

And before the next fifty years have passed a large majority of the living and many of those that will be born will have joined the "innumerable caravan." Already in the vicinity of large cities it is exceedingly difficult to obtain space for the "sad abode of death." The potters' fields, as now conducted, are a reproach to civilized man, a blot and a stain upon God's fair earth. Most of the countries of Europe and many of our own States have laws regulating the practice of incineration and some are already discussing the subject of obliging all unclaimed bodies to be disposed of in this way.

Some have objected to this way of disposing of the dead on religious grounds. This is merely the echo of long established custom. They believe that somehow or some way these bodies are to be called forth from the grave to again rehabilitate the spirit. If that is so, I think we should desire them to be purified "even as by fire." Holy Writ expressly declares that a certain class shall be "ashes under the soles of your feet." If it were necessary for the eternal happiness of the spirit that the body should decay and mold amid creeping things and loathsome grave-worms, then we pity the spirits of those noble martyrs who for conscience' sake were burned at the stake and their ashes scattered to the four winds of heaven. I know that when the thought of being incinerated is first presented to us we recoil from it with a kind of horror. There seems to be something dreadful in the idea of consigning our bodies to the destroying effect of great heat, but with the sober second thought this in a measure passes away, especially when we realize that the ultimate result cannot be changed one iota by anything we can do.

The growth of public opinion in regard to any great reform is necessarily slow. Progressive ideas along new channels of thought, the result of higher planes of knowledge, may knock long at the door of public sentiment for admission, and, like truth, though crushed to earth by an opposing conservatism, they are sure to rise again, and the eternal principles of sanitation, of expediency, and the best interests of mankind are sure to prevail.

ABSTRACT OF DISCUSSION.

Dr. Watson inquired of Dr. Abbott whether the Legislature of Massachusetts had not already taken some action on this subject.

Dr. Abbott replied that about a year ago the matter came before the Legislature in the shape of a request for incorporating a body to establish a crematory. He considered that there was one valid objection to cremation, and one only. Of course there is the sentimental consideration for old customs, etc., but that is not a valid objection. In certain very rare instances it might cover crime. A man, having committed murder, might get the body cremated, and all traces of it would be destroyed, unless some mineral poison had been employed, but this could be guarded against by requiring a certificate from the attending physician and from the coroner, and in suspicious cases an autopsy should be made. The points urged in favor of the question are the prevention of certain contagious diseases, the question of economy in funeral expenses, the expense of grounds in which bodies must be buried. There is, he said, one other point, and that is the transportation of bodies. There is in most of the States a pretty definite law in regard to transportation. That is, a body dead from certain infectious diseases cannot be transported without great precautions have been exercised, disinfection, etc., but of course that would be unnecessary in incineration.

Dr. G. P. Conn said there was one point that people seemed to forget, and that was that in burial or inhumation and in incineration the object was the same, — the destruction of the body. In the one case it is done quickly and designedly, in the other it is committed to the earth and by a slow process it arrives at the same state. He thought if those who have any sentiment in the matter could see from time to time the disgusting condition of things going on beneath the surface of the ground, they would agree at once that incineration is certainly far better. In burial, every possible means is used to prevent the body from coming in contact with the earth. Vaults are bricked up and often covered with iron plates in order that the body shall not come in contact with the earth. Some three years since at the meeting of the Public Health Association at St. Louis, Mo., a paper on this subject was read, and in the discussion which followed incineration was unanimously supported by the members from New Orleans. This was their reason for supporting it: In the first place, instead of burying the body it is placed on the surface of the ground and covered with earth to the depth of about eighteen inches. This is necessary because the land is low and water is found very near the surface. As a result, he was told that no one thought of following the remains of a friend to the cemetery, the stench being so bad that no one could go in its vicintty.

Rev. Mr. Williams asked why cremation was not more extensively practised.

Dr. Conn replied that the chief reason was the sentiment of the people which arose largely from ignorance of the ultimate results arrived at. He considered it the best way of disposing of the dead that could possibly be contrived. By it was preserved all that was preservable. The ultimate result is the same whether bodies are buried in the earth or are incinerated. It seemed to him that out of respect to the dead and in regard to the true sentiment incineration was very much to be preferred.

HARMONIOUS DEVELOPMENT.

BY BROTHER NOAH, OF THE BROTHERS OF THE CHRISTIAN SCHOOLS.

Humanity's welfare is a common interest. In such a cause, catholic in its every aspect, all good men are kin. It is, therefore, a heartfelt pleasure to take part in this gathering of cultured gentlemen, to contribute to the success of the cause that brings us together. Our mission is that which a great pope gave the venerable De La Salle, — "to banish ignorance, the source of every evil." It must, therefore, be attractive and instructive to meet, as we do to-day, to discuss the best methods whereby the light of educational truth may be made to shine more brightly throughout the land. This reunion of minds on a common cause suggests an association of ideas in which history repeats itself most pleasantly. It recalls the discussions which De La Salle held with his most skillful disciples during Christmas and midsummer holidays, to determine the best methods by which to render instruction attractive and education effective.

It was this vein of thought which led to the belief that cullings from the pedagogic principles of De La Salle, and later writers, with special reference to physical development, would be a fitting theme upon which to interest this distinguished body. No attempt shall be made to put the old wine into new bottles. The dust of time adds depth of color to the printed thought; and, perhaps, more true force of persuasion may be obtained by rightly choosing what others have said, than by painfully saying it again in another way. To do any work well, to be successful in any mission, the work must be held in honor by the worker; to do noble service and true, it must appeal to man as worthy of his best endeavors.

According to De La Salle, "the educator is an associate worker with Christ; he acts the part of the guardian angels, and exercises their functions." The schoolroom he defines as "the novitiate of Christianity, the drill-ground of Christian and civil living." "The educator must have this high ideal of his labor, that he may acquit himself worthily and successfully of the important mission to which he is called." What is education? . . . "To cultivate, to train, to develop, to strengthen, and to polish all the physical, intellectual, moral, and religious faculties which constitute nature and human dignity in the child; to give to these faculties their perfect integrity; to establish them in the plenitude of their power and action; hence, to form man, and to prepare him to serve his country in the various social offices he may be called on to fill, and thus, in a higher conception, prepare him for eternal life, by elevating his present life. Such is the work, such is the end of education." Therefore, the educator has a vocation, a mission, from above.

Frederick W. Faber tells us that "childhood is a time of endless learning. It learns at play, as well as at school. It learns without knowing that it observes, and imitates without suspecting that it is not original. . . . There are few men who will ever in after-life be half so contemplative as they were amidst the capricious activities of childhood." Impressed by like convictions, De La Salle tells the educator that the child's voice takes his tone, the step his peculiarity, "for our wiser years still run back to the despised recollections of childhood, and always we are fishing up some wonderful article out of that pond." "There is, then, an obligation of such weight incumbent upon the Christian educator that all other obligations unite in enforcing it, — he must never fail to give his pupils good example."

To succeed in life's struggle, children need a certain degree of intellectual culture. They are required to pass examinations and to reach a fixed standard. The State exacts that those who assume the duties of educators in its schools shall give evidence of intellectual ability and technical skill. But, above and beyond all mere book-learning, before all tact and skill, must be placed the moral worth, the character, the influence for good, which virtue alone can impart. This parents have a right to expect; they cannot, in conscience, accept less.

John Henry Newman, in his Oxford University Sermons, has tersely said that "it is holiness embodied in personal form which men cannot confront and bear down. . . . We shall find it difficult to estimate the moral power which a single individual, trained to practise what he teaches, may acquire. . . . The attraction exerted by unconscious holiness is of an urgent and irresistible nature; . . . it draws forth the affection and loyalty of all who are, in a measure, like-minded. Such men . . . are placed upon their watch tower, and light their beacons on the heights. Each receives and transmits the sacred flame, trimming it in rivalry of his predecessor, and fully purposed to send it on as bright as it has reached him."

De La Salle requires that to the power of knowledge be added the force of good example. In admirably written pages he tells the educator that in the crusade against ignorance the motive and the motto must be, "God wills it." Study is necessary. The educator is the spring from which parched lips slake their thirst. He must study, not for the mere pleasure of knowing, which would be curiosity; not for the sake of display, which would be mere vanity; not merely to sell this knowledge, which would be a traffic, but that by means of the information thus acquired, he may procure his own as well as his neighbor's welfare, as far as he is able, and as far as may be required. The course which De La Salle wished the accomplished educator to pursue, he found in the striking words of the Apostle of the Gentiles: "Whatsoever things are true, whatsoever modest, whatsoever just, whatsoever holy, whatsoever lovely, whatsoever of good fame; if there be any virtue, if any praise of discipline, think on these things."

To fill in this comprehensive outline, La Salle requires the Christian educator to make "a profound study of the sacred Scriptures," and he does not hesitate to assert that "the more thoroughly we devote ourselves to the study of the sacred Text, the more competent we shall be to instruct others." It is this knowledge which will enable the educator to "*teach, reprove, correct, and instruct in justice.*" The first lesson which De La Salle wishes his disciples to give their pupils is one of respect for the divine Word. At the opening of each day's work the teacher is required to read a portion of the New Testament. The Book is to be opened reverently and lovingly, while the light of the blessed face of the Meek One shines out from its inspired pages. It is from the words, the acts, the lessons of the divine Teacher that De La Salle wishes the educator to learn that to establish harmony between the spiritual and the physical in man, the lesser faculties must be made subservient to the superior powers; all must tend to a common end, so that his acts, his reason, and his conscience may be in perfect accord.

To form the child morally, he must be gradually led to act from supernatural motives; he must be taught that self is not the great object for which we live, and that true happiness is the outcome of self-sacrifice, instead of self-seeking. Instruction or education must not have for its object "mere getting on in the world; it must be no mere telling the child what he knew not, but making him what he will remain forever." The child must be taught that we have not here a lasting dwelling; that earth is only a rehearsal for the song-land above.

Through the force of example, by dint of instruction, by the drawing out of his own better nature, the child must be made to apprehend the true, to love the beautiful, to will and practise the good. "It is our will that determines our whole destiny. Over all, and the root and principle of all, giving life and being, aim and direction, weight and measure and intrinsic worth to all, is the soul's determining power, which we call the will." But to direct properly the child's will is not meant to condemn him to depend absolutely on the will of others, and to deprive him of all liberty of choice. We must equally avoid nurturing in a young soul a slavish disposition or the spirit of revolt. . . . A child who never deliberates, never chooses, who is passive in all he does, will never be good for anything but to submit cravenly to men and things set over him by circumstances. . . . As Plato tells us, education ought to have the pliancy and strength of a chain of gold, which leaves him whom it restrains the freedom of his movements, and makes itself felt only at a moment when he may be in danger of swerving from good or precipitating himself into evil.

To strengthen the will, De La Salle insists upon the formation of good habits by the repetition of acts opposed to the child's chief failings. We may say of the correct guidance of the will what Ruskin writes of notable crags and ravines: "Each is the expression not of any sudden violence done to the mountain, but of its little habits persisted in constantly." The child must be taught to learn this lesson, "take himself for better, for worse, as his portion; that though the wide universe is full of good, no kernel of nourishing corn can come to him but through his toil bestowed on that plot of ground which is given him to till." Hence he must be led to understand that labor is a necessity from a physical as well as a moral aspect. Without labor, self-preservation is impossible; it is essential to the perfecting of the soul, for without labor, instruction is impossible, and without instruction there can be no intellectual or moral development. When man ceases to labor, he is guilty of self-destruction, his existence, his happiness, and his dignity are in jeopardy. Labor is, in some sort, part of our nature, since man is born to labor, as the bird to fly. Labor procures health of body and vigor of mind; it makes us contract habits of order, and assures our well-being and independence. As stated by De La Salle's latest commentator, the pupil must be required and induced to practise self-help.

A child naturally desires information. It remains with the educator to direct this desire; to turn it into a proper channel. This thirst for knowledge, this willingness to labor, is seen in the thousand and one questions propounded by even the youngest child. When such queries are met in a friendly and intelligent spirit, the master has succeeded in the highly important work of making the schoolroom a home.

A teacher that causes his pupils to labor for the pleasure found in the work itself has solved one of the most difficult of educational problems; he has combined morality and curiosity, not by discouraging youthful queries or juvenile precocity, but by giving both a direction in which they find full play, without incurring any of the dangers inseparable from an unguarded and unguided thirst for knowledge. Curiosity is intellectual thirst; it depends upon the teacher to determine whether it shall be healthy or morbid. Parents and teachers must bear in mind that children will be busy; it remains for the intelligent educator to give this ceaseless activity and mental bustle proper aliment and direction.

Memory holds a prominent place in the system which De La Salle introduced. But, mindful that harmonious growth is the only true development, he requires that memory's twin sister, the intelligence, shall be nurtured with her. "Memory lessons that are too long or too difficult should not be given to pupils, and they should not be allowed to learn the rules and definitions until a certain number of practical exercises on these subjects have been given." Besides facilitating the memorizing of lessons by preliminary explanations, De La Salle insisted upon frequent historical illustrations, choice citations, the prudent use of text-books, and particularly upon frequent repetitions. Among his practical methods for developing memory was the committing of choice selections, previously explained, which the students afterwards recited and paraphrased. So careful was he to allow nothing to be learned by rote that he required his teachers to explain the hymns which the children sang during devotional exercises.

Speaking of the systems of instruction and education which have prevailed for the last fifty years, Herbert Spencer says that "the pupil is now hampered by fewer restraints, and other means than punishments are now used to govern him." . . . Earlier education, he pretends, "was held to be best which most thwarted the wishes of the children, and cut short all spontaneous activity." Assuredly, Mr. Spencer does not mean to condemn indiscriminately. Christianity, through the schools she has established, has been, from the beginning, the mother of true liberty. Through her accredited agencies she has taught truth, and the truth alone maketh free. "Break not the bruised reed and quench not the smoking flax," has been the burthen of her exhortation to those who have taught in her name. The distinguished sociologist could not certainly have had in mind the system devised by the man whom Ravelet has characterized as "The Columbus of the New Education," who forbade any rule to be conned till practical illustrations of its underlying principles had been given, who insisted that children should be encouraged to ask questions. Mr. Spencer certainly could not include in his denunciation the founder of normal schools for secular teachers, just two hundred years ago, who allowed his pupils to cultivate their own specimens for botanical study, and who, as early as 1706, had written:

"It is necessary to reach the mind through the senses. Indeed, with very young children, who have so much of the animal in their nature, whose minds are so little developed, the inventive method is essential." "He is happy who, from earliest years, has learned to make a link of every object in creation to bind him more closely to his Creator."

There was nothing constrained in the regulation that "if public fairs or bazaars are held in the vicinity of the school, the children should be taken there, and useful and interesting articles should be pointed out and explained to them. If there are zoölogical gardens, the pupils should visit them, and the Brothers should explain some instructive traits of the animals.'' Mr. Spencer should have made an exception in favor of De La Salle, who, in the words of State Superintendent Newell, ''framed a curriculum of studies and organized a system of education which met the new order of ideas. Exact gradations, simultaneous rehearsals, object lessons, normal schools, polytechnic schools, industrial schools, reformatory schools, — all had a place in his inventive and capacious mind, and all were realized by his constructive genius.''

''De La Salle's handbook of method,'' says the late General Hazen in his ''School and Army in France and Germany,'' ''has scarcely been surpassed; his work is destined to do more in the way intended than that of any other Frenchman of modern times.''

Children could not be ''hampered'' when his instructions were followed. ''Children,'' he writes, ''must be induced to love school, and consider it a privilege to be sent there. Parents usually worship their children; nothing will please them better than to send their little ones where love attracts them. Children usually become disgusted when teachers have no tact, or when they display no energy.'' Children can but be attracted where teaching is given with the conditions which the following principles involve:

1. ''Clearness in the language employed, with that degree of simplicity of illustration adapted to the average and lower grades of intelligence.

2. ''An appeal to all the child's faculties and senses, which being thus harmoniously developed serve to form the highest type of the intellectual and physical man.

3. ''That the pupils be kept on the alert by the judicious use of question and answer, occasional discussion, and such an interchange of views as shall maintain a lively interest.

4. ''Variety of form which will preclude fatigue, while appealing to and reaching the many grades and classes of child mind.''

This method is not one in which ''a child's mind can be made to order," and in which "its powers are to be imported by the school-master." The child's mind is not "a receptacle into which knowledge is to be put and there built up after its teacher's ideal." De La Salle's method, as Mr. Newell states, is: "Principles of education are universal, their application must be local." The purpose of De La Salle was "not to turn out a number of coins with exactly the same inscription and ornamentation, but rather to study the nature of each separate piece of metal and to subject it to such pressure and leave upon it such an impress as would best suit its character."

Wisdom, which makes us weigh things with the scales of the sanctuary, gives the key-note to the harmony which De La Salle desired should exist between the natural and the supernatural in man; between mind and matter; between the physical and the intellectual. With Montaigne, he taught that the educator is not to develop the soul or the body, *but the man.* Admit that the body is the temple of God, add to this "the profound study of the sacred Text," "despise not one of these little ones," and the conviction must come that no effort can be too strong, no labor too great, that can develop this piece of God's work, so noble in reason, so infinite in faculty, in form and moving so express and admirable, in action like an angel, in apprehension like a god. If the soul be "the vital spark of heavenly flame," the body is the lamp in which its light glistens; it is the organ, the instrument, the exponent of the soul.

Physical education does not pander to sense, does not foster evil inclinations; on the contrary, it seeks to render man, body and soul, as strong, as sound, as independent as possible of external accidents. Physical education demands untold care. It is a duty which conscience imposes. The rules that govern it should be part and parcel of the information of the masses; and yet, may we not say, with a freedom for which Mr. Spencer himself thinks it necessary to apologize, that while men personally inspect the condition and treatment of their stock, few pay the slightest attention to the dietary hours and ventilation of the nursery? Most landlords, farmers, and peasants have some knowledge of the properties of the various foods which they give their cattle, while they know next to nothing about the qualities of the food they give their children. If we read history aright we shall see that a people's greatest triumphs were achieved when individual strength was at its zenith; and it behooves us to see that our children are so trained as to prepare them for the struggle in which physical worth must play a leading part. "No trouble is considered too great which conduces to the mental development of children; and for their bodily welfare, good bodily development is equally important. Moreover, it seems sad that a trouble which is taken with the fattening of 'stock,' should be considered too great in the rearing of children."

Fenelon desires that the educator should be a father; De La Salle insists that an intelligently loving mother's skill can alone fill the position. An intelligent, loving mother! How much is comprised in these few words! What thoughtful devotedness, instinctive knowledge, telling what is needed, while love supplies it; what deep-seated conviction of the importance of the mission to be accomplished! Here is enthusiasm subdued by reason; severity tempered by serenity; continuity of purpose and fixity of aim; flexible yet maintained rule; exact ideas of the relative importance of things.

Dupanloup wishes that we should acquire even the wisdom of the mother's seeming weakness, when her heart divines what no other can guess. To be a true educator we should, in La Salle's words, "be the hand of God's own Providence."

We need not deplore the extinction of Spartan discipline, though we may certainly take exception to part of the physical training by which it has been replaced. If the education of earlier ages was too severe, ours is often too lax. We are not sure that the spoiled child is a fair exchange for the constrained one. True physical development requires the child to be gradually inured to reasonable hardship. The body should be so nurtured as to forestall sickness, if possible, and to withstand its attacks when they cannot be avoided. Physical education should lessen the child's supposed wants, and thus lay the foundation of true individual liberty. Children should be accustomed, within reasonable limits, to brave "the healthy inclemencies of the weather." "If," says the author of "Intellectual Life," "we consult the weather less, we shall not consult the physicians so often." We must not suppose that children feel as we do; to treat them as if they did is, in the language of a distinguished French specialist, "to make them pensioners before they have entered the army." The child that has not learned to endure inconvenience and even slight pain without repining, will become a weak pupil, and eventually an egotistic man.

Our excitable manner of living is developing a race of nervous people. We are all nerves. Everything is done in a hurry. The results of such a system of education are not hard to predict; effeminate children, nervous men, gritless society, are the outcome. Physical education should help to prevent the inroads of sensuality and self-gratification. The child must learn that enjoyment is not the supreme end of life, and that while we may take reasonable precautions to avoid inconvenience and physical suffering, we must never forget that this earth is not a place of unalloyed enjoyment.

But it is time to specify in what De La Salle considered physical education and health-building to consist. We may summarize his views under the headings of fresh air, healthy nourishment, regularity of life, the proper use of games, exercise, and recreation, personal neatness.

Fresh air is the first element in the development of the physical man. While we certainly do not live on air alone, it is still true to say that pure air nourishes and fortifies our physical organs, while foul air vitiates the healthiest nourishment. Hence, De La Salle prescribed that "the school should be placed between yard and garden; the class-rooms were to be contiguous, with glazed partitions; they were to be lightsome and airy; fan-light windows were placed on opposite sides." Before accepting the direction of a school, De La Salle either went personally, or sent one of his most skilled teachers, to examine the buildings, and to order such changes as were needed.

In the earliest editions of De La Salle's "School Management," we find distinctly directed what Herbert Spencer speaks of as "the modern practice of breaking the prolonged morning and afternoon lessons by a few minutes' open-air recreation." During this time the class-rooms were to be thoroughly ventilated. De La Salle was convinced of the truth of the aphorism that "man's expended breath is man's secret poison." Frequent airing of the class-rooms is all the more important, as pupils, otherwise fault-finding and sensitive, rarely complain of the lack of ventilation. Sufficient superficial area, large and commodious surroundings, walls ornamented with suitable illustrations, thoroughly ventilated and lightsome apartments, desks of various sizes, were among the hygienic conditions which De La Salle prescribed at the close of the seventeenth century. In the beginning of the eighteenth century (1711) we find him requiring more salubrious locations for his schools in various parts of France.

Next to fresh air, good food holds the most important place in physical development. It is instructive to compare the views of Mr. Spencer with those of De La Salle. The author of "Education" writes: "Children are very fond of vegetable acids. Fruits of all kinds are their delight . . . but there is a general tendency to forbid the gratification. When on fête days there is an unlimited access to good things . . . or when by some accident the free run of a fruit garden is obtained, then the long-denied, and therefore intense, desire leads to great excesses. . . . Turning from the question of quantity to that of quality we may discern the same ascetic tendency. Not simply a more or less restricted diet, but a comparatively low diet, is thought proper for children. . . . Is it not obvious that the denial of better food will be at the expense either of growth, or of mental activity, as constitution and circumstances may determine?"

Thus far, Mr. Spencer; let us, *per contra*, hear De La Salle. In his boarding-school at St. Yon he personally superintended the vegetable and fruit garden from which the pupils' table was supplied. The botanical and horticultural gardens were likewise objects of his special solicitude.

"The nourishment given the children," he writes, "must be healthy, yet frugal." All should be of the best quality, yet simple in kind and preparation.

In his "Christian Politeness" we find: "God does not forbid the relish which nature takes in the use of food, but reason and religion interdict either sensuality or gluttony. Necessity, then, should be the motive of an action, which is in itself a subjection rather than a perfection of our nature. Food is destined for the preservation of health and strength, but every kind of excess in its use should be avoided. He who would preserve temperance in its use, should confine himself as much as possible to the ordinary hours of meals. Food is given to children out of meals, but not to adults whose constitution or state of health does not stand in need of such indulgence. To eat several times in the day, and whenever an inclination for food is felt, besides being detrimental to health, may be regarded as a species of gluttony; and to drink without necessity, out of the time of meals, will soon lead to habits very dangerous to sobriety."

If "order is heaven's first law," and "earth a rehearsal for the song-land above," it follows that regularity of life is an essential to the perfection of "those mortal parts that are to put on immortality." The regulations of De La Salle's first boarding-school, as well as those of the many day schools he opened throughout France, bear ample evidence to the value which he set upon having "all things done decently and according to order."

We condense the following from well-stored pages: "Children should be deeply impressed with the many advantages attending early rising. It is one of the best economists of time; it promotes the health of the body and mind, and greatly assists in the formation of moral and industrious habits. Sleep, when indulged in to excess, impairs both physical and mental strength, and destroys all relish for enjoyments except those of a coarse and often dangerous character. Hence, a fixed hour for rising, and also for retiring to rest, should be appointed, from which there should be no deviation unless health or some other necessity require it.

"The sluggard seldom, if ever, prospers in business, or attains any degree of eminence in his profession; while those who have attained a healthy old age, or great intellectual acquirements, have generally acknowledged that they have been in a great measure indebted for these advantages to their regularity in the distribution of time, and to their early rising.

"Be very exact in the distribution of your time, and decide beforehand the occupation of each hour.

"Guard against indolence. Be always occupied with something useful and serious.

"Do not frequent too many pleasure parties. Conduct yourself always with moderation and reserve; be always active. Use amusements as remedies which ought not to become injurious, dangerous, or continuous."

Perhaps there is no more attractive portion of De La Salle's principles than those which he applies to the use and abuse of physical exercise.

"Diversion serves to relax the mind from serious occupation, and the body from the fatigue of painful labor. God Himself authorizes relaxation when necessary to repair the strength lost by continuous application.

"The consecration of the seventh day after creation is emblematic of the rest which man may enjoy after toil. Our Lord Himself interrupted His laborious mission in order to afford His apostles a short but necessary rest. In the most beautiful ages of the church the faithful, still animated by the feeling derived from Christ's visible presence, consecrated certain days to joy and repose.

"A Christian's pleasures should be weighed in the balance of moderation and necessity.

"During recreation the children should prefer those exercises which strengthen and develop the body. Let them play at ball and tennis, they should roll hoops, run races, learn to fence, leap, vault, etc. Long walks should be taken when possible. Such exercises will do more good than those which exact quiet, such as chess, cards, etc.

"Military drill should be a part of the daily exercises.

"Pupils should have a fixed time for recreations and walks; they require the open air."

La Salle's ambition seemed to be to find ruddy faces in green fields.

"Children must be accustomed after meals to take such exercise as shall render circulation lively, facilitate digestion, and enable them to fall asleep as soon as they retire.

"They should be fatigued but not exhausted. Healthy fatigue makes a soft pillow; it gives a rest too sweet to be wanton, a rest that shall be labor's fittest seasoning."

"Neatness of person" closes the series of chapters in which De La Salle treats of physical education and politeness. Mr. Spencer's rules anent the use of clothing are almost identical with those of the founder of the Brothers of the Christian Schools.

"The quality of dress should suit the person who wears it. It should be genteel and modest. Clothing ought to be carefully brushed, the shirt-collar should be nicely adjusted, and always clean; the shoes well polished; in short, the whole exterior ought to present the most scrupulous cleanliness and unaffected grace.

"We should guard against singularity, both in the fashion and the style of our clothes. The style of the country we live in, and the society we frequent, are the rule we ought to follow in the choice and form of dress. But capricious and eccentric styles ought to be rejected, like the folly of their inventors.

"Be neither the first to adopt the newest fashions, nor the last to reject the oldest.

"All that announces vanity or ostentation in dress ought to be avoided; it degrades him who thinks he is thus distinguishing himself. On the other hand, we should avoid negligence, which results from idleness, and is often accompanied by a lack of personal cleanliness.

"Strict attention should be paid to cleanliness, to preserve health and be agreeable to those with whom we associate."

The subject of education as discussed by De La Salle has been merely skimmed, and already we have taken up more than the share of time so kindly allotted by this convention. May we not conclude that the harmonious development just described will "train, strengthen, and polish all the physical, intellectual, moral, and religious faculties, which constitute nature and human dignity in the child"? May we not hope that by it every talent shall be doubled, and each vital force increased? Shall we not here find man imitating Nature?—

"True to her trust, tree, herb, or reed,
She renders for each scattered seed,
And to her Lord with duteous heed
Gives large increase."

This harmonious development shall give us young men "inflamed with the study of learning and the admiration of virtue; stirred up with high hope of living to be brave men and worthy patriots dear to God and famous to all ages."

POLLUTED DRINKING WATER IN NEW HAMPSHIRE.

BY PROF. E. R. ANGELL, DERRY, N. H.

What constitutes polluted water?

To discriminate between the things that tend to life and those that tend to death is chief in the great struggle for existence. The force called life is unknowable except by its manifestations. Its leading characteristic is to organize material into a body agreeable to its nature. As an under-builder, or servant, it employs chemical forces. Whatever is antagonistic to the vital function, interfering with its action in organizing and maintaining its body, constitutes disease, which really is incipient decay, and which if not checked will bring death, and ultimately result in complete decomposition of the organic structure. If substances having greater chemical affinity than the life principle can control are introduced into the body, they tear down what life has built, as it were, to obtain material for their own building, the compounds they determine. This appears to be the action of poisons. The quantity of the substances and the strength of the life principle determine the extent of the consequences.

Viewing disease as incipient decay and keeping in mind the generally accepted theory of putrefaction advanced by Schwann, Pasteur, and Cohn, which describes the process as a chemical change induced by bacteria, we are in possession of facts which afford some remarkable suggestions. Bacteria may become invigorated by their work of destroying certain substances so that if they enter the body the living substance cannot resist their energy to determine decomposition, the type of the disorganization, or disease, varying with accidental causes. Sometimes the body is wonderfully receptive. The action of the senses is inconceivably delicate, and the vital function seems as delicately poised. The smell of certain odors will at times nauseate, and through a deranged stomach may lead to a protracted sickness. Certain poisonous shrubs are exceedingly deadly to some if touched, or even approached.

If the foregoing theory of the action of life and disease is reasonably correct, and if the statements are true, it shows how difficult it is to determine what degree of uncleanliness constitutes polluted drinking-water, though it is evident that all water capable of causing disease is polluted. But we believe that until the thought of drinking-water containing even a trace of excrementitious matter, garbage, or any decaying thing whatsoever, shall cease to be repugnant to the feelings of refined and intelligent persons, so long such water will be prejudicial to health, and consequently polluted. What per cent of urine, fecal matter, sink drain, rotten vegetation, or decaying animals would you be willing to drink knowingly?

Samples of water from nearly one hundred and fifty wells in the State of New Hampshire have been examined within the last twelve months. An analysis was desired in a great many instances because the parties suspected the water might not be suitable for drinking, and not because sickness really existed. In a few cases sickness existed.

The information is not so full as might be desired; but it is sufficiently well established that the pure soil and granite hills are no safeguard against the filth that accumulates about our dwellings. Sixty-six per cent of the waters examined were polluted. The average amount of the leading substances indicative of contamination in the samples found to be polluted leaves a wide difference from the average of the same substances in samples pronounced good or fair.

The average amount of chlorine in the polluted samples, setting aside two extremely bad ones, is 1.88 grain per gallon. One of the samples excluded in making up this average contained 25 grains per gallon, almost rivaling the pump water in the Oxford Market at London, which contains 33 grains. The average for the good samples is nearly half a grain (.489). The average amount of free ammonia, after deducting five very exceptional cases, is .1214 part per million, against .0497 for the good samples. The average amount of albuminoid ammonia per million part, excluding two extreme cases, is .177 for the polluted samples against .084 for the good samples.

It would appear that by taking figures about half way between these averages, the highest limit of these substances in water at all fit to use for drinking purposes is found. If water contains one grain of chlorine per gallon, .09 part of free ammonia per million, or .13 part of albuminoid ammonia, it is polluted and should be condemned. These figures are none too low. Observation has taught that water need contain no considerable amount of decaying organic matter to be prejudicial to health. That polluted water weakens the system, rendering it more subject to sickness even if it does not cause any specific disease, and that the system so weakened always suffers worse in case of specific attacks, is well established.

A case occurred in the practice of Dr. W. H. Dinsmore of Milford which is to the point. During the winter and spring of 1884 a family in Hollis, consisting of father, mother, and five children, were feeling a little ill, had sores on their hands and faces, and were badly constipated. Tonsilitis had been endemic in a radius of about two miles, several persons having it in mild form. Then the family referred to were all taken with it at once in an ulcerative form and were very sick; one child, a girl of eleven, died. Analysis of their drinking-water gave the following pathogenic results: Odor, foul like a drain; color, milky and turbid; chlorine, 1.2 grain per gallon; free ammonia, .004 part per million; albuminoid ammonia, .12 part; iron, .2 grain per gallon; bacteria.

I reported that the water suggested contamination from the sink-drain. Examination of the premises subsequently confirmed this. The drain emptied about forty feet from the well, upon the outcropping of a ledge whose dip was slightly toward the well. The well periodically contained sufficient iron from natural sources to give a yellowish tint to clothing washed in it. The sink-water for years had been slowly working its way toward the well. The iron tended to produce constipation, and greatly increased the poisonous effect of the polluted water by interfering with the eliminative process of the system. General debility, together with sores on the face and hands, resulted. The body, already diseased, easily succumbed to a specific malady, and the complication produced a grave form of ulcerative tonsilitis.

The well was cleaned out, and several weeks later another examination of the water was made. The water was found to be clear and odorless. Only 0.3 grain of chlorine per gallon, no free ammonia, and but .049 part per million of albuminoid ammonia; a little iron and a few infusoria. The condition of the water was remarkably changed, and it had become unusually good well-water. The sink-drain had been carried beyond the ledge, but, of course, that did not work a beneficial result in so short a time.

A remark as to how cleaning the well produced such a change may not be amiss. Water everywhere seeks its level. The water in the well and in the surrounding springs was at the same height. Practically the water in the well was stagnant. The sink-drain water had reached it, and through the natural process of diffusion of liquids had pretty thoroughly mingled with it. When the water in the well was removed, much spring water flowed in, while there was but very little or no drain water to enter. Hence a high degree of dilution resulted which could never occur until the water in the well was removed. The beneficial effect of frequently cleaning a well liable to receive surface water cannot be overrated. A sample of spring water before the spring was cleaned had every appearance of being bad. There were four grains of chlorine per gallon, and much iron. After the spring was cleaned, every indication showed the water to be good. The chlorine was reduced to only 0.3 grain, and there was but a trace of iron.

Another case to the point in question occurred in Goffstown. A gentleman and his wife had been suffering from ill health a year or more. The symptoms at first were numbness in the hands and arms, also in the lower extremities, and a soreness in the bones like rheumatism, together with general debility, or, as the gentleman expressed it, "seemed to be completely run down." In the summer a touch of scarlet fever, or symptoms of it occurred, together with sore throat and rash. What is singular and very important is that both were affected with all the symptoms alike, which showed emphatically, as did the case in Hollis, that there was something in the water positively injurious to health. Two physicians pronounced the trouble lead poisoning; two other physicians attributed it to polluted well-water. The use of the water was discontinued, and both persons became better.

Examination of the water December 1, 1886, gave these results: No odor; color, milky and turbid; chlorine, 1.3 grain per gallon; free ammonia, .05 part per million; albuminoid ammonia, .1 part; considerable nitric acid and phosphoric acid; strong trace of iron; no lead; many bacteria. I reported that the water was polluted with urine and other excrementitious matter. Upon inquiring, the following confirmatory facts were learned: The well is an old one, eighteen feet deep, situated on a sidehill lower than the buildings and sixty feet from the stable; soil, sandy. The cellar under the stable received the dejections of four privies, and formerly the sink drains from four tenements; but the drains are now run to the river, one hundred yards distant. Water is always turbid when low, also colored, and sometimes has an offensive odor. If this water had been analyzed a few weeks earlier it would have shown worse results.

As the case seemed important, another sample was examined a month later with these results: Water, odorless and colorless; chlorine, two grains; free ammonia, .09; albuminoid ammonia, .048; considerable nitric acid and phosphoric acid. This water in the space of a month had so changed as to become undoubtedly safe to use for drinking purposes. The change is significant, and teaches that great importance must be attached to even one unfavorable indication, though that in itself may not be at all prejudicial to health. I believe that in the majority of such cases the water is periodically positively bad, and that, since it is impossible, without much trouble, to tell exactly when the water might be safe, its use should be abandoned altogether as the safest course.

An inquiry into the cause of the change in the above case is instructive. The chlorine had increased; the albuminoid ammonia, which indirectly measures the actual amount of organic matter present, had decreased. The chlorides, nitrates, and phosphates, being more soluble than the organic matter, had penetrated the earth to a greater depth and wider extent. The freezing of the ground had prevented further access of filth, but the deep springs being unusually full in winter came in contact with the salts that had penetrated the earth and washed them into the well. Meanwhile the organic matter in the well had diminished both from decay and dilution.

Both pure and impure springs may flow into a well; they may flow periodically, from which cause the quality of a water will vary. This condition of things exists in a well in Exeter, the water of which I have examined at six different times. This well was cleaned out about the first of November, 1885. A sample of water collected from one of the springs as it entered the well gave these results on examination: Chlorine, .5 grain; free ammonia, .01; albuminoid ammonia, .04. After the well had filled and settled a sample from it gave .8 chlorine; free ammonia, .013; albuminoid ammonia, .262. In other examinations of this water the amount of both free and albuminoid ammonia has varied from .14 to .82.

It frequently happens that the quality of water varies at different depths. Water taken from the bottom of a well may be polluted, while that near the surface is good. Solid organic matter settles to the bottom, and the water nearest to it receives the most filth. As the pipe from the pump usually extends nearly to the bottom of the well, the worst portion of the water is always used. It would be a most excellent provision to have the pipe so arranged that water would always be taken from near the surface. The following case illustrates the truth of these statements: Water pumped from near the bottom of a certain well contained 1.2 grain of chlorine and .132 part of albuminoid ammonia. Water dipped from the same well contained only .4 grain of chlorine and .09 albuminoid ammonia.

A source of filth may remain near a well for many years before the water becomes objectionable to the senses, and those using it become slowly poisoned long before they are aware of it. The following case is illustrative:

In the summer of 1886, I analyzed a sample of water from the well of the parsonage in Hollis. The odor was very foul and strong of hydrogen sulphide; color was milky; .8 grain of chlorine per gallon; free ammonia, part per million, .12; albuminoid ammonia, .22; water full of bacteria and fungi. The history of the case which was furnished through the courtesy of Rev. S. L. Gerould is this: Rev. D. B. Scott moved from the house in December, 1884. For a year before he left, the water could not be used on account of its taste aud odor; the latter penetrated the whole house. The water never before had given cause for complaint. The well is fifteen feet deep and about seventy-five years old. Mr. Scott was troubled with some cutaneous affection from which he never before had suffered, and from which he has since been free. He also suffered from some other specific trouble, but the informant had forgotten what. His family also were not well, but have been much better since moving from the house. From time immemorial it was the practice to run the sink-water into a pit under the barn. The pit also received the dejections of the privy and the contents of the stable. After Mr. Scott left, the pit was cleaned out and a large cemented vault constructed in its place, and the sink-drain was carried to a safe distance. The well was thoroughly cleaned, but the water was used sparingly. In the latter part of the summer, a short time after the analysis was made, the well became dry. After the fall rains filled it, the water appeared good and is used at present without any apparently bad results.

That well-water becomes polluted gradually cannot be too strongly emphasized. A person constantly using the water may become somewhat inured to the poison, but we believe that it more generally happens that the slowly increasing poison of the well so slowly undermines the health that the cause of debility is not suspected. The weakened system drags itself about until some day a little overexertion, an overloading of the stomach, or a sudden cold, percipitates the worst consequences in one form or another. We are not positive but that as often as one of the so-called filth diseases is traced directly to polluted drinking-water, several of the other diseases, especially consumption, might be traced to the same source.

Different poisons interfere with the vital functions in different ways, cause different symptoms and different diseases; also the condition the body is in from other causes modifies the effect of the poison. Here is a case of water sufficiently bad to cause typhoid fever, yet its effect on the system was very different. The poison was determined particularly to the nerve centers. The patient repeatedly became better when away from home, but soon after returning became worse. The color of the water was milky and turbid; a little odor; 1.5 grains of chlorine; free ammonia, .32; albuminoid ammonia, .22 part per million; much nitric acid and water full of bacteria.

Of all the cases of typhoid fever reported, the cause of about half of them was attributed to polluted water and the cause of a large number of other zymotic diseases has been referred to the same.

In the summer of 1885, three men drank from an old well in an open field. They were stricken with typhoid fever. A dead skunk was found in the well. The odor of this water was very foul. Its color was milky; chlorine, .3 grain per gallon; part per million of free ammonia, .046; of albuminoid ammonia, .56. The water was alive with bacteria and there were many large, remarkable infusoria.

Early in the fall of 1886, ten persons contracted typhoid fever by drinking from a well supposed to have received typhoid poison from a case near by. Analysis of the water gave the following pathogenic results: The odor was extremely foul and strong of hydrogen sulphide. The color was milky and turbid; chlorine, 2.4 grains; free ammonia, .16; albuminoid ammonia, .72 part per million. The water was full of bacteria; bacteria termo, bacilli, and spirilla; infusoria, turbellaria, nematoidea, cotton fibers, epithelium, and much disintegrated matter. Whether the fever was communicated by germs, cannot be said positively. Excrementitions certainly had access to the well, so there was a ready road for them if they existed. The organic condition of the water was sufficiently bad to poison the strongest system.

Typhoid fever has been caused by drinking water that contained decaying vegetable matter, excreta, sink-drain water, decaying bodies of animals as in the case given above. The evidence amounts to proof that typhoid fever can originate *de novo* in most any source of filth. Instances occur not infrequently where the cause of the disease was attributed to the well, but on examination of the water it was found to be good. Some think that the germ of disease may remain in the water long after the signs of pollution have disappeared, but there are reasons which make it more probable that the wrong cause was assigned. The exciting cause is most active when the water is low and contains most filth, but quickly disappears when the wells become full from the autumn rains, whereas if the cause was a specific germ in the water no amount of dilution would render it harmless. Persons have contracted fever by drinking from some other well than their own. A case is recently recorded where a whole family in France contracted the disease by drinking polluted well-water a single day.

The following case of scarlet fever is of more than usual interest. I am of the opnion that it establishes the fact that this much more contagious disease may originate like typhoid fever from filth *de novo*. The water was analyzed October 30, 1886. Its odor was very foul ; color was a bright yellowish tint ; chlorine, 1.8 grains per gallon ; free ammonia, per million part, 1.248 ; albuminoid ammonia, 1.424 ; iron, .63 grain per gallon, a very large amount ; much phosphoric acid, epithelium, bacteria, and disintegrated matter. I reported that the privy was indicated as the source of pollution, possibly the sink-drain. Dr. Blaisdell kindly furnished the history of the case in the following letter :

GOFFSTOWN, January 13, 1887.

EDMUND R. ANGELL :

Dear Sir, — Your letter of the 12th is at hand and I am very glad to answer it as this particular case is one of a series which I have been studying with more than ordinary interest for reasons which I will state, after which I will answer your questions in detail. It is the accepted opinion among physicians that scarlet fever is never sporadic, that every case must originate in some other case. I have always accepted this theory until within the last two years, during which time some cases have occurred which have somewhat changed my views, and have made it possible for me to believe that even scarlet fever may yet be proved to be as much a filth disease as typhoid fever. You will remember that Eklund, of Stockholm, supposed that he discovered the peculiar microbe of scarlet fever in 1882, at any rate he says he has found these organisms in the soil and ground water of the Isle of Skepphohm, in the mud of trenches dug for water mains, and in the mold on the wall of old barracks where scarlet fever was prevailing. He also asserts that the disease was produced in children by drinking milk mixed with this water, and that he knew scarlet fever to break out in a block immediately upon exposure of the ground water by an excavation. If this theory is a true one, I cannot see why the microbe is not likely to be found in well-water polluted by privy-vaults, or sink-drains, or any source of animal or vegetable impurity.

Now for this particular case. The house, one of the better class of cottages, was built in June, 1885, and was first occupied by a family consisting of man, wife, and six children. The house is on a sandy plain and the site is a new one, no other house ever having been built on this site or near it. The source of water supply at this time was a driven well, and being the family physician during the entire time they occupied the house, I am able to state that they never had scarlet fever or any other eruptive disease during this time. They moved out in August, 1886. The house was thoroughly cleaned and another family moved in in September. The water supply not being sufficient, the new well was dug and they began to use the water during the last week of September. The family consisted of man, wife, and two children, a boy of ten and a girl of 17. This girl was a pupil in the graded school, and was constant in attendance at the time she was taken sick. From the first this water was so offensive that it could not be used for drinking purposes, but was used somewhat for culinary purposes. From the first it was particularly offensive to this young lady, the use of it causing nausea and faintness. On October 10, 1886, this young lady came down with the premonitory symptoms of scarlet fever of a severe type, which ran a typical course of fever, abundant eruption and most profuse desquamation. During this time I sent the water to you for examination.

The last case of scarlet fever previous to this in this village was on June 18, 1886, on a different street, the only case at the time, and was malignant and the patient died. The young lady referred to above had not been out of town except on the day she was taken sick, but was a regular attendant at school up to Saturday, October 9.

Answers to questions:

1. Were any persons using the water sick before the analysis was made?

The young lady was the only one using the water, she doing the culinary work for the family; and you will notice that the water was first used the last of September. She was taken sick October 10.

2. Is the water still used for domestic purposes?

No. On speaking of the well to the owners of the building they took out the pipe and had a new well dug at a considerable distance from the house.

3. From examination of premises, with the aid of the analysis, what have you concluded to be the source of the pollution?

The workmen in digging the well struck what they called a vein of water. I think this vein must have come from a northeasterly direction and have passed through the area saturated with the contents of the vault and possibly the sink-drain.

4. Answered by draft. [Well 20 feet from privy and sink-drain; passed to the river between the two.]

FRANK BLAISDELL, M. D.

P. S. — This young lady was the only one sick with the fever in town, and no other case came from it.

It would hardly seem necessary to speak of the pollution of rivers in New Hampshire, yet a reference to the subject may not be amiss, more especially as several cities of Massachusetts take their water supply from the Merrimack River. Examinations made by the Massachusetts Board of Health in 1873 showed that the river water above Lowell was good drinking-water, also that above Lawrence. But examinations last year showed that the percentage of impurities from animal and vegetable putrefaction has increased above Lowell by 36 per cent, and above Lawrence by 57 per cent. The view entertained some years ago that running water purifies itself was wholly without foundation. About the only beneficial effect possible results from increased dilution. The Rivers Pollution Commission of England, after extended investigation, have concluded that "there is no river in the United Kingdom long enough to secure oxidation and destruction of any sewage which may be discharged into it even at its source."

I recently examined a sample of water from Sunapee Lake, and one taken from its outlet, Sugar River, some miles below the lake. The comparison of results was very marked, and distinctly showed the effect of the small quantity of sewage which the river received from a single village two or three miles above.

Water is quite often contaminated with lead. It is a popular notion that hard water has no action on lead. While this is mainly true, there are so many exceptions that it can hardly be said to be a rule. The very agent, carbonic acid, which in the majority of cases introduces lime and magnesia, the substances which make water hard, also, if in excess, introduces lead. When lead is placed in water, the free oxygen present forms an oxide with it. This is slightly soluble in water. If a little carbonic acid is present it unites with the oxide to form a carbonate which is insoluble in water, but soluble in carbonic acid; so that when the latter is present in excess, which may result from decaying organic matter, it dissolves the lead compound. I recently saw an instructive illustration of this process in a cistern lined with lead. The metal was not corroded on the sides of the cistern except about the seams, which was evidently caused by galvanic action between the solder and the lining. But on the bottom, under a thin sediment of organic matter, the lead was considerably corroded. We removed some paper which the plumbers had pasted about a pipe in the cistern, and found that the metal under it was badly corroded. Carbonic acid from decaying matter was the solvent. Nitrates and excess of chlorides in water also dissolve lead.

The microscopic examination of a water is very important. The biological character of 70 per cent of the waters found to be polluted in this State during the past year was unfavorable. While it is extremely doubtful whether the organisms that attend decaying matter in water are there for other reasons than for the sake of food, their presence is significant, since it enables one to form an opinion of the amount of organic matter in solution.

The treatment of the subject would hardly seem complete without more special reference to the germ theory of disease, since it has assumed so much importance during the last few years, and since many cases have occurred where the circumstances seem to warrant, if not to demand, belief that specific germs in drinking-water were the direct cause of certain diseases. This has led to a division of scientific opinion as to what renders water dangerous to health.

A recent writer says: "It is not decaying garbage, animal fragments and even sewage . . . that are dangerous when taken into the system with the water supply, but certain morbific micro-organisms which may accompany them." When there is evidence that the dejections of a patient suffering from some filth disease have entered the water supply, extended observation has shown that such water is rendered, in some way, productive of disease. In such cases there seems to be a real *contagium vivum;*

but in cases evidently sporadic, the matter is not so clear. Here the theory is inconclusive; it does not solve the real mystery; it only removes it a step by inserting a conventional link. If a germ produces disease, what produced the germ? At best, it is only a secondary cause. If we cite analogy to the yeast germ, the discovery of which really led to the germ theory of disease, it will teach that certain conditions are essential to its production, and that the discovery of these is the thing of chief importance. Living yeast cells are produced in fermenting and putrefying liquids which decompose spontaneously, and to which no yeast has been added. It is more than probable that the same is true of disease germs. Where they already exist, they propagate themselves and communicate disease from one person to another. Under certain conditions of decay they are evolved *de novo,* and if taken into the system cause disease and communicate it from one to another.

The dilemma now is, spontaneous generation or evolution from modification. The logical conclusion of the theory of spontaneous generation is that a thing not only creates itself, but also creates conditions agreeable to its individuality; for if any antecedent conditions exist they are causes. Moreover, all reliable research teaches that all living at present comes from parents, whether the same as the parent or modified by environments. If then the germ theory of disease is accepted for sporadic cases, the theory of modification seems necessary also. That some things at times may be a source of life, and at others a source of death, is not without reason. Bacteria are universal. They exist in earth, air, water, on plants, in the bodies of animals. Many of them, so far from being prejudicial to health, are thought to be conducive to it. But go to a polluted well in a healthy locality, isolated from disease. There never was a case of typhoid fever, or of any other filth disease in the neighborhood. It seems impossible that a germ from any preceding case could ever have been conveyed to the spot; but suddenly one who has drunk the water is stricken with fever. The supposed disease germ is found in the water. How came it there? The most reasonable answer is this: The chemical changes of decay under the existing conditions produced something which made harmless bacteria pathogenic. And yet the disease may have been caused by a specific poison and not by a germ. But although no experimenter has succeeded in producing typhoid fever by introducing the supposed germ into the blood, or has been able to convert one kind of microbe into another in respect to form, yet in culture experiments outside of the body virulent kinds have been made less virulent, and to lose their virulency altogether on animals most susceptible to them, so that a reversal of the results whereby harmless microbes become pathogenic would hardly seem impossible.

ABSTRACT OF DISCUSSION.

Col. Marvin asked if water became purified by freezing.

Prof. Angell replied that it used to be the opinion that water purified itself speedily in freezing, but that and the theory that running water purified itself are fallacies. Ice from a pond badly polluted has been known to be the means of conveying disease in numerous instances.

Dr. Abbott of Mass. said that he thought there was a great difference between purifying and clarifying water. There are substances in solution as well as in suspension in water. When it is said that filtration will take out typhoid fever germs, he thought it was going farther than present investigation will warrant. Chemical analysis, he said, will tell us of danger and harm, but will not tell us of perfect safety. It would be better for cities to take their water supply from pure sources rather than attempt filtration.

J. B. Sawyer inquired if Prof. Angell believed ordinary well-water preferable to river or lake water.

Prof. Angell replied that wells, if located in the country away from dwellings and stables, were preferable to river or lake waters; otherwise they were not. He preferred lake to river water.

Dr. E. B. Aldrich said that if it be true that the germs of disease that are constantly being poured into the river from the sewers, are not destroyed, but still remain there in an active form, then there is additional evidence of the value of sanitation. Since the introduction of city water in Lowell the percentage of typhoid fever has been very much decreased.

THE DISPOSAL OF WASTE MATTER.

BY G. P. CONN, M. D., PRESIDENT OF THE STATE BOARD OF HEALTH.

"God made the country, and man made the town," so wrote the poet Cowper, leaving us to infer that the country being natural in its character, and the town artificial, man is responsible for all the changes that are developed. In a certain sense this is true, and when men mass themselves and their families together in limited areas, the conditions at once become aggravated and require more attention in proportion to the number of people that are living under similar circumstances.

Hartshorne says: "Apart from human interference, there is in nature a balance of formation and destruction, of life and death, food and waste, making a perfectly natural economy everywhere. Primeval forests are clean, though abounding in luxuriant life, every one of whose forms runs rapidly into decay, as every particle, as soon as it dies, is taken up by some of those myriad organisms, vegetable or animal, minute or large, which are everywhere seeking for food in the great struggle for existence. Man comes in with his artificial constructions, and sweeps away much of this economy of nature. Under his tread the green earth grows bare. His habitations, transient or permanent, exclude multitudes of the lower and lesser creatures, whose ordained functions as natural scavengers are thus impaired or annulled. Hence comes matter out of place, foulness of the earth, the water, and the air; stench, miasma, pestilence."

Thus it seems as though the invader of nature's domain is surrounded on all sides by foes, some of which are invisible except by the aid of the microscope or of chemical analysis; yet, the earth having been given to man for his habitation, his conquest of the world is a perfectly legitimate one. We read that man was created "but little lower than the angels," and being endowed with reason, his obligations are twofold; therefore, it falls upon us to count the true cost of civilization, and meet all its varied conditions as they exist or arise with the wisdom that is only developed from man's highest and noblest attribute, a sound, well-educated mind, securely enthroned upon a well-developed and healthy body. For as primeval forests are clean and may be considered as representing nature's laboratory for maintaining a balance of formation and destruction, so man in his artificial conditions must maintain or restore the original balance of primeval nature, by providing for the re-appropriation of the products of life, and the results of death and decay around us. The greater the population in a given area, the more certain any neglect of this natural law will be to bring miasma and pestilence.

The evils to be guarded against belong chiefly to the pollution of the soil, the water, and the air, by decaying vegetable or animal matter. It is true that many other things must be taken into account in laboring to secure perfect health, but for the purpose of this paper we shall consider only the disposal of waste and effete matter, which having "survived its usefulness" its exit must be provided for in such a manner as not to become a nuisance to ourselves or our neighbors, nor be permitted to become a source of disease or a factor in producing ill-health in the community where it is situated. This waste matter includes not only animal excretions, but also garbage, such as waste from the table and kitchen, ashes, and refuse of all kinds that may collect or be in any manner developed in or about one's habitation. It is generally conceded that in following nature's design, all this waste material should be resolved into its elementary principles by being consigned to the earth from which it came. This immutable law of nature that nothing shall be lost, involves a never-ending cycle of change, which followed out consigns "dust to dust, ashes to ashes." From this the vegetable kingdom thrives for a brief period, only in turn to furnish food to the animal, which living the allotted period must return again to its original elements.

In the country, and especially on the farm, there is generally some attempt to carry out this plan. The compost heap becomes the place of deposit of more or less of the refuse and waste products of the farm, while the waste from the table and kitchen is placed before the swine for all it is worth. The sink-spout oftentimes becomes an abomination by reason of its depositing its burden in close proximity to the house or water-supply, yet with proper care and with well-defined plans and objects in view, I can see no reason why this manner of disposing of waste material does not accomplish nature's design as well as, or even better than, any other that has been devised. In the village and in cities this becomes impracticable. At large hotels and summer resorts, where large numbers congregate, it is impossible to adopt such simple and primitive means and expect to accomplish the object; therefore, some other means for the disposal of waste and effete material must be provided. Water-carriage has been generally adopted, and when sewers and connections are properly constructed, with effective ventilation and plenty of water to remove the sewage quickly to a sufficient distance from town or city, it has generally been considered the best yet devised for disposing of the fluid and soluble matter of the household. Still there is a very large amount of table and kitchen garbage that cannot be disposed of in this way, for any attempt to float this through the sewers of a city would very soon result in completely closing them, so that even fluids would not find an outlet.

Now while this mode of disposing of sewage has been accepted as the best yet devised, by no means has it been considered by sanitarians as the true method, for common sense as well as common law does not sanction the pollution of our rivers or other bodies of water, as is made necessary by delivering large quantities of sewage and mingling it with the current. For a time this may be the best we can do, but it will not be complimentary to our inventors and the men who push our business relations where they are most needed, if we do not in a reasonable time find a new way of disposing of waste material, and that more in accordance with nature's law that nothing shall be lost.

New Hampshire, rugged and unproductive as are many of her broad acres, should have her people aroused to the fact that an immense amount of valuable material is being deposited in her lakes and rivers which should go to repay her soil for yielding up even a moderate growth of vegetation. Let this be faithfully followed for even one generation, and the fruitfulness of our hillsides and valleys will rival the rich alluvial deposits of our western prairies.

Besides this, we cannot go on polluting our streams with impunity. Sooner or later there will come a day of reckoning for the transgression of nature's immutable laws, when principal and interest will be demanded, and when at some point epidemic influences will hold the power, and innocent lives will be sacrificed to satisfy the demands of disease that is born of ignorance, nurtured by neglect, transmitted by water-power, and delivered to its victims by some water company that cares nothing for the health of its consumers or has not the back-bone necessary to demand the protection of the law against the possible contamination or pollution of the watershed that furnishes the source of its water supply.

Considerable has been done of late to demonstrate the feasibility of sewage filtration with a view of disinfecting the mass and then draining away the fluids, and utilizing the solids by mixing with loam, and using this as a fertilizer. Considerable time and money have been spent during the past year by one or two firms in the development of this plan and with fair prospect of success, although I suspect the quantity of loam that is required to render the solid portions innocuous will prove a stumbling-block in our large cities, for in order to render any such scheme a success, it becomes necessary that it must be at least self-sustaining, and therefore there is a limit to the expense of the production of fertilizers from sewage, else there will be no demand, as the farmer can get his supply elsewhere.

In Chicago experiments have been made looking toward the purification of sewage, and then pumping the disinfected fluid portion into the Des Plaines and Illinois rivers, so that in due time it may reach the Mississippi. The daily press has criticised the plan on the supposition that all the sewage undiluted and unchanged was to be diverted into those streams, and the inhabitants along these rivers naturally objected to having such a mass of filth turned into a stream that flowed past their doors.

In commenting upon this plan, one of the commissioners says: "There is no intention of sending sewage, diluted, oxidized, or other, into the source of the city's water supply. On the contrary, it is intended to turn the entire current the other way, and thus obviate any liability of contamination. The plan being to complete an intercepting sewer along the bank of the Chicago River and pump the sewage along with 800,000,000 gallons of water daily into these sources of the Mississippi. It is also intended to separate the solids for fertilizing purposes."

I mention this only to show that even in very large cities something is being done to solve the problem of how to dispose of waste and effete matters, and that scientists are already beginning to realize that nature's method must be followed. Theoretically this plan must succeed, but practically the immense amount of solid matters from a city like Chicago, would require such an area of loam to completely deodorize this mass and render it in such condition as to be available for fertilizing purposes, that it would not be long before it would defeat itself in the necessary expense to obtain the material to mix with the sewage, for loam once used could not be used again under one year, as the land must be cropped in order to find a use for the fertilizer.

To my mind cremation, or destruction by fire, must be the ultimate manner of disposing of this material, and in that way reduce the volume of the solid waste, and at the same time preserve the organic salts, which, being rendered innocuous and entirely dedorized and disinfected by being reduced to ashes, can be transported to such points as the demand for such material requires, where the farmer may utilize by mixing with other matters as he may desire.

About one year since I read a paper before the State Board of Health of New Hampshire, advocating this method for the disposal of kitchen waste and table garbage from summer hotels and camp-grounds, and gave a description of a furnace devised by Capt. H. I. Railly, U. S. A., that seemed to be eminently well fitted for this purpose. This furnace was erected on Governor's Island in New York harbor, and was of a capacity to cremate from ten to thirty cubic feet of garbage daily, at the lowest possible expense. The following letter from Capt. Railly which was received a few days since, shows how well it has done its work, and at how small an outlay. The furnace was constructed early in 1874, and in August last (1886) Capt. Railly says:

"There has not been a penny spent on it for repairs, nor are any repairs needed. The only expense necessary is the value of the labor of the prisoner who is in charge of it. I never made any test of its maximum capacity for cremation, because in order to do so I would have been compelled to store the garbage for several days in order to get a sufficient quantity on hand. In designing the furnace I limited its size to the amount of garbage which would accumulate at the port in two days, because the fire once lighted I wished the combustion so regulated that it would continue burning during the twenty-four hours, so it need be unnecessary to start a new fire.

"Judging from my experience, and the garbage is dumped into the furnace just as soon as it arrives from the quarters, I should say its cremation is a very simple matter. The only construction necessary is a space surrounded with walls lined with fire-brick, with two divisions, so arranged that two lots of garbage can be kept separated, one lot being exposed to the heat given off by the combustion of the other. The only fuel needed is for the first fire; this dries the first lot and the combustion of this prepares the second, and thus it is continued indefinitely. The only cost, in addition to the original expense of construction, will be for the necessary labor to remove the ashes, dump the garbage in the furnace, and rake the fire. This will not require skilled labor. I suppose a dozen men have been in charge of the furnace at Governor's Island since its construction.

"I am sorry I cannot give you any very definite information as to preparation of grate surface. The only time I put the full draft of the 50-foot chimney on, the garbage disappeared so rapidly that I had to discontinue it. One square foot of grate surface will dispose of five or six cubic feet of garbage in a couple of hours readily with good draft.

"I am sorry I did not have the necessary time to make some experiments with the furnace, but our service in the army is so arranged that since I left Governor's Island I have had to devote myself to my special branch of the profession of arms, — the artillery, — and make up for the time used in garbage consumption with the purely administrative duties."

I have been much interested in this experiment on Governor's Island, because in some respects it corresponds so nearly to certain situations in this State, except that on this island the number of people to be provided for is nearly the same during the whole year, while at the Shoals, on Mount Washington, and at many of our large hotels and summer resorts it is only for a few months in the hot weather that it is found troublesome to dispose of garbage. However, the principle is the same, and if such a furnace can be made self-sustaining after being once started up, then it may be claimed that the expense has been reduced to a minimum, and modifications can be made to suit the particular localities.

MEANS FOR THE PREVENTION OF MYOPIA IN OUR SCHOOLS.

BY H. D. W. CARVELLE, M. D., MANCHESTER, N. H.

The increasing prevalence of defective sight, especially near-sight, in our public schools, renders it necessary to adopt some means for its prevention. All authorities on this subject agree that the best method yet advised is the periodical testing of the eyesight of all school children. Where this custom has been adopted, and it is being carried out in some of the larger cities in this country, and to a considerable extent in England and Germany, it has proved most satisfactory. People in general have erroneous ideas of what constitutes normal sight. I frequently hear patients make the assertion that they have good sight, when it may be only one half or even one tenth of the normal standard, and they go through life supposing they see as well as those who have normal vision. It is very important that children should know what normal vision is, for it is in childhood that myopia or near-sightedness develops.

According to the most reliable statistics, twenty-seven per cent of all scholars in this country are near-sighted. The near-sightedness increases from three and a half per cent between six and seven years of age up to twenty-seven per cent between twenty and twenty-one years of age, but develops most rapidly between the tenth and fifteenth year, when the body as a whole is developing most rapidly. It is a well-established fact that prolonged use of the eyes on near objects, as in reading, writing, sewing, and drawing, tends, in the case of some children, to an alteration in the shape of the eyeball, and the production of permanent short-sight; and this, when it has once begun, is apt to increase from year to year throughout the whole period of school life. Near-sight acquired in this way does not at first interfere with study, and, therefore, often advances unnoticed and attains a considerable degree before any steps are taken to check its progress. To lessen the evil, it is necessary that such defects of sight should be recognized at the outset, and that precautions to prevent their increase should be adopted early. The simplest means of accomplishing this object is a periodical testing of the eyesight of all school children. In addition to cases of near-sight, this test will of course bring to notice defects of sight of other kinds, as far-sight and astigmatism. The latter, though not caused by school work and not necessarily increased by it, are in many cases a hindrance to the scholar's progress, and, if capable of correction, should be attended to at once.

Young people should be prevented from using their eyes too long and too closely on near objects. The amount of near work should not exceed reasonable limits, and the manner of doing it must be such as to produce the least strain on the eyes. The scholar must be taught to work with his head as erect as possible, and with the work from twelve to fifteen inches from the eyes. A comfortable seat with a support for his back is necessary. He must work at a sloping desk, and not at a flat table. He must be so placed that there is good light on his work, and that he is not dazzled by light from in front. The light should enter the room from one side or behind. His books should be printed in good large type, easily legible at the required distance. He must accustom himself to read with the book placed or held well up in front of him, so that he may not stoop over it. He must be taught to sit square to the desk while writing, not twisted to one side or bent over it. These rules require observance at home as well as at school. The principal, or his assistant, of every school should make it a part of his duty to test the eyesight of all the children in his school at least once a year. Any pupil whose sight is below the standard should be reported to his parents, and there the duty of the teacher should cease. With the parents should rest the responsibility of obtaining competent advice as to the nature of the defect, the necessity of wearing glasses, restricting work, etc.

The adoption in our schools of testing the sight of all school children annually, at least, or at the beginning and end of each school year, would, I am confident, be productive in the course of a few years of an immense amount of good. It would save from needless aggravation many of those cases of defective sight which now pass unheeded, until the increasing failure becomes an actual hindrance to further study. It would call the attention of teachers, of parents, and of scholars to the frequency of damaged eyesight in our schools; and would arouse that general interest on the part of the public which is much needed. Various test types have been devised for testing the eyesight of school children, but Dr. Dennett's, which is a combination of figures, letters, and characters, seems to me the best.

Directions for the use of the test types: Hang the card on the wall in a good light, about four feet from the floor. Place a mark on the floor five metres, or sixteen feet four inches, from the test type. If the figures or letters cannot be read at this distance by either eye, the sight is below the normal standard, and it should be so reported to the parents. Each eye should be tested separately, the other being covered by a card or the open hand, but not pressed upon.

ABSTRACT OF DISCUSSION.

Hon. James A. Weston called upon Dr. Watson for some information regarding the lighting of our schoolrooms.

Dr. Watson said: "I cannot at this time give you a full answer on this question, for the reason that the surveys of the schoolhouses of New Hampshire which have been received, aggregating from one thousand to fifteen hundred, have not yet been fully tabulated. The returns from one hundred and seventy-six schoolrooms in Merrimack county, however, have been tabulated, and the results were given in the last report of the State Board of Health. There was scarcely a sanitary room among them. In a majority of the rooms no attempt is made to ventilate, and I think in the larger part of them the light was admitted from all sides. The lighting space is considerably below the recognized standard, as is also the cubic space per scholar. The cities in the county were not included in the report. The survey of the schoolhouses for the entire State, exclusive of the cities, will be published in the forthcoming report of the State Board of Health."

Dr. F. B. Aldrich said he was glad the subject had been brought up. We have discovered that many things are at fault in our schoolhouses. There is the question of gases from sewers, bad water, ventilation, the distribution of heat, and now the question of how light shall be admitted. I would like to ask Dr. Carvelle which is the direction from which light should be admitted so that it will fall upon the book and not give a reflection of light and not injure the retina of the eye. It is a matter that has been discussed a great deal, and is of great importance in our schools. The question is, How shall light be admitted?

Dr. Carvelle said, "It is generally considered that light should be admitted from behind so as to come from the left side. Cross-lights and lights from in front are bad."

It was asked if there had been any experiments in admitting light from one direction, and what had been the results.

Dr. Watson said that he did not know of any such, but several recent experiments had been made in lighting rooms from two directions, placing the desks diagonally with the backs of the desks toward the corner of the room. That method was suggested by Mr. Briggs, and had much to do with the construction of the Bridgeport schoolhouse; but what the result had been in this case had not been determined, since the schools had not been of a sufficient duration since the experiments were begun to compute any results. Of course it is well known that short-sightedness is increasing among school children. The disease is confined to the educated class. He hoped Dr. Carvelle would continue his investigations, and present his paper to the school board of Manchester.

Hon. James A. Weston said, "There is one other matter which I wish to mention. It has been discussed somewhat by the State Board of Health, and is in regard to schoolhouses for New Hampshire. It seems to me that it might be put into shape so as to be of much practical advantage to the people of the State, and that is, to make ample plans of schoolhouses of various sizes. Almost every country district of the same size requires a schoolhouse of the same kind and the same character. Now, if the State Board of Health, or some other proper authority, could be clothed with power to have prepared several plans of schoolhouses of different sizes, so that almost any district in the State could find a schoolhouse plan suitable to its wants, we should then get our schoolhouses as nearly perfect as we can hope to get them. It seems to me that a matter of this sort would be of great practical advantage to the people of the State. I do not know but Dr. Watson has already elaborated this thing. I know it has been mentioned several times."

Dr. Watson: "Since commencing the work of ascertaining the condition of the schoolhouses of the State, I have become thoroughly convinced that there should be state supervision over the construction of our schoolhouses. I think that proper plans should be furnished, at a nominal price or gratuitously, to towns or districts, embodying all the best known principles of schoolhouse architecture, and that it should be made obligatory for them to construct their schoolhouses from the specifications so furnished. Only in this way can the faults in schoolhouse construction be overcome. Whether the authority should be vested in the State Board of Health, or some other department, may be determined hereafter, but the necessity for some supervision is certainly apparent."

Col. T. E. O. Marvin inquired if it would not be well to have the walls of school-rooms tinted.

Dr. Carvelle replied that it would, and said that olive was one of the best tints that could be used.

THE AIR SUPPLY OF SCHOOL-ROOMS AND OTHER OCCUPIED APARTMENTS.

BY SAMUEL W. ABBOTT, M. D., SECRETARY OF THE MASSACHUSETTS STATE BOARD OF HEALTH.

The object of the present paper is the presentation of certain principles relative to air supply and the methods of their application, chiefly the former.

Of the population of New Hampshire, 63,000, or about one sixth, were in attendance at public schools in the State during the year 1885, the greater part of which number were between the ages of six and sixteen years.

It is not too much to demand that this army of youth should receive, so far as their physical welfare is concerned, every possible advantage. Neglect of this duty toward the scholar during this most susceptible age of his life is fully as censurable as a like neglect of his mental training. Both branches of the education of the child should receive equal attention, in order to fulfill every indication in that most excellent maxim, "a sound mind in a sound body."

Too often on entering a school-room do we meet a bright, intelligent teacher, a school eager for instruction, but, on the other hand, a school-room overcrowded, poorly ventilated, or not at all; badly lighted; insufficiently or over heated; with ill-fitting desks and other appliances; a corrupted water supply, and evidence to the senses, in the school-room itself, of defective drainage or plumbing in some part of the building. It may be that not all the features in this sorry picture are present at the same time, but too often one or more is the rule.

Such conditions are inconsistent both with health and with comfort. These defects are not confined to school buildings, but are met with in dwelling-houses, churches, lecture-rooms, halls, work-shops, and especially in railway cars.

Pure air to breathe, pure water to drink, pure food to eat, and a pure soil to live upon constitute four of the essential conditions of healthy existence. The first only of these conditions, *pure air,* as affecting the health of persons who spend a portion at least of their lives in such places as I have just mentioned, I propose to make the subject of this paper.

QUANTITY.

1. And first as to the *quantity* of air essential to health under the conditions named. This embraces the two topics, (*a*) the amount of air-space essential to health and (*b*) the amount of fresh, out-door air to be supplied for each person per hour or per minute. It is quite clear that these two points have a definite relation to each other, since in any given case, with a definite amount of air-space and a like definite and constant supply, and with a given number of inmates in an apartment, if the cubic air-space is diminished, the air supply must be increased in order to maintain a like condition of purity of the air of the apartment, the number of inmates remaining the same, and *vice versa.*

(*a*) In school-rooms the amount of cubic air-space should be at least 200 cubic feet for each scholar of average age, and more for older pupils.

A room of 10,000 cubic feet, measuring about 30 by 25 by 13⅓ feet, would afford for forty persons an air-space of 240 cubic feet for each, with a liberal allowance for the space taken by furniture and the occupants themselves. In an estimate of the amount necessary for school-rooms, allowance may be made for recesses and intermissions, and consequent opportunity for entire or partial renewal of air by opening doors and windows.

In a railway car carrying passengers and containing 3,000 to 3,500 cubic feet of air-space the space for each person will vary from 40 cubic feet upwards, as the car is full or nearly empty, an amount far too small if the air is not rapidly changed by ventilation. In a sleeping-car, and especially in the lower berths, with walls shut in on every side, with about forty-five to fifty cubic feet of air to each berth, and with scarcely any opportunity for its renewal, the condition of the occupant at night is somewhat like that of premature burial, so far as air supply is concerned.

The ventilation of an ordinary railway car in winter, when in motion, with air considerably elevated in temperature above that of the surrounding air, would appear to be an easy matter, and such is the fact, the chief difficulty being to exclude smoke, cinders, and dust. This may be done quite effectually by admitting air at the rear end of the car, which can be readily accomplished, even when the car is in rapid motion, so long as arrangement is made for its aspiration at the top of the car. Train officials and the janitors of schoolhouses and other public buildings should be instructed in the proper management of ventilators, and required to use them for the health and comfort of the occupants, a matter that is usually neglected.

(*b*) What amount of fresh air should be supplied to each person per hour or per minute?

Forty feet per minute may be taken as a minimum for adults; some authorities place the required amount as high as sixty feet. For young children, using a smaller amount for respiration, less than either of these amounts is requisite, especially in rooms frequently opened at recesses or intermissions. Two thousand feet per hour for each pupil, except in higher grades of schools, may be deemed sufficient.

Dr. Billings says, in his recent treatise on this subject, that "perfect ventilation can be said to have been secured in an inhabited room only when any and every person in that room takes into his lungs at each respiration air of the same composition as that surrounding the building, and no part of which has recently been in his own lungs or in those of his neighbors, or which consists of products of combustion generated in the building, while at the same time he feels no currents or draughts of air and is perfectly comfortable as to temperature, being neither too hot nor too cold."

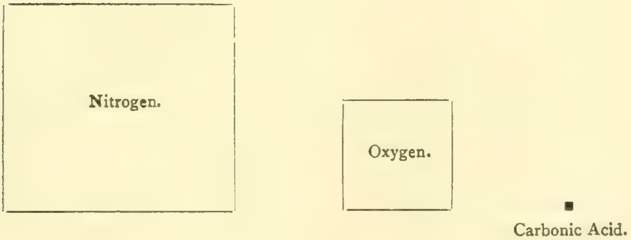
THE QUALITY OF THE AIR NECESSARY FOR THE HEALTH OF OCCUPANTS OF SCHOOL-ROOMS OR OTHER APARTMENTS.

2. This topic naturally succeeds that already named, since it furnishes the reason for the change in the air of apartments when occupied. In order to treat this subject intelligently, a brief statement of the composition of the air is here necessary.

Pure out-door air is composed of 79 parts of nitrogen, 20.96 of oxygen, and .04 of carbonic acid, and also a small amount of watery vapor.

NORMAL OUT-DOOR AIR.

Nitrogen . . .	79.
Oxygen	20.96
Carbonic Acid .	.04
	100.00



Of the parties to this mixture the carbonic acid has special importance in connection with the subject of air supply, not because of actively poisonous qualities, as is the case with carbonic oxide, but because it is an exponent of the respiratory impurity of the air. Other dangerous products of respiration are doubtless evolved at the same time with the carbonic acid, and hence the amount of carbonic acid which is capable of measurement is taken as an expression of the entire product.*

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* Billings on Ventilation and Heating.

There appears to have been a change of opinion as to the action of this gas upon the health of those who breathe it, and also as to certain other properties which it possesses. In consequence of its greater weight, it was for a long period taken for granted that carbonic acid would necessarily be found at the bottom of occupied rooms. Actual determinations, however, have shown that this gas, as well as others, is quite equally diffused throughout apartments.

There can be no doubt that the injurious effects of carbonic acid have been overestimated by confounding it with its excessively poisonous namesake, the carbonic oxide (or carbon monoxide), and I am also inclined to the belief that there has been too great a reversion of opinion in the direction of a belief in its harmlessness. The case of workmen in bottling establishments has been cited as an instance of its innocuous qualities, such men being constantly exposed to the liberation of free carbonic acid. In this case, however, there is quite a difference from that of persons exposed to the air of crowded apartments, since the carbonic acid is added to the normal air in the former case, while in the latter it is evolved at the expense of a portion of the oxygen of the room.

Dr. Angus Smith says upon this point that he had always considered carbonic acid as remarkably innocent, in small quantities, and was accustomed to look on the organic substances as the real evils; but his experiments in a tightly closed leaden chamber so far changed his mind that he was inclined to believe that carbonic acid had an injurious influence even in small amounts.*

The amount of carbonic acid added to the air of an apartment by an adult is about three fifths of a cubic foot per hour. At this rate one man would add to the air of a tightly closed apartment of 10,000 feet of air-space three cubic feet in five hours, raising the amount present to six or seven parts in 10,000, the exact ratio depending upon the amount previously present. In order, therefore, to reduce this amount to that consistent with health, a renewal of 3,000 cubic feet per hour, or 50 feet per minute, would be required, and this amount would also be necessary for each added occupant.

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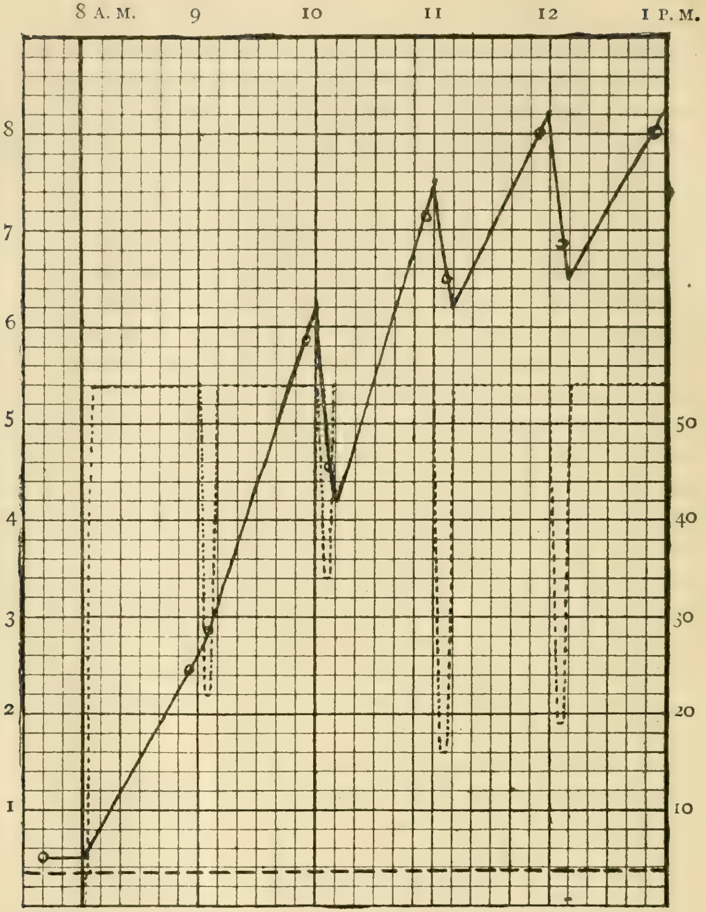
* "Air and Rain," by Robert Angus Smith, p. 179.

Dr. Billings estimates twenty-five to thirty cubic feet per head and per minute as sufficient for school children.

A special reason for attention to the *quality* of the air supply, with reference to its pollution, is the enormous quantity which we use daily. We are wont to consider the quality of a water supply as a matter of the highest importance to the consumer, and justly so, and also to estimate the impurity of water by the number of grains per gallon, or parts per 100,000; and if we find a minute trace of ammonia or of other impurities, especially in connection with possible causes of pollution, we regard it as a dangerous water; and yet the average daily amount of water drank by each person is but a fraction of a gallon. On the other hand, when we consider the air supply, we find that each child at school takes into his lungs from 300 to 500 gallons of the air of the school-room in the five hours of his daily attendance, and each mechanic or operative in a work-shop breathes at least 1,000 gallons of the air of the shop in ten hours of labor. It is therefore a matter of the highest importance that the air should be pure and that the waste products of respiration should be removed as rapidly as possible and replaced by the pure out-door air. This is especially necessary in the case of work-shops and factories where processes are conducted in which dust or injurious gases are superadded to the products of respiration.

Combustion, both by fires and for heating, and also by gas-lights, lamps, and other similar forms of lighting, has an effect upon the air similar to that of respiration, a single gas-burner producing six feet of carbonic acid per hour, which is eight or ten times as much as that produced by one adult. More thorough ventilation is therefore required for occupied apartments at night than by day, unless they are lighted by electric lights.



This diagram from Rietschel's Luftung und Heizung von Schulen illustrates the effect of respiration upon the air of an occupied, imperfectly ventilated school-room in Berlin.

The figures at the right side and the dotted line show the number of scholars present in each hour of the session.

Figures at the top represent the time of day in 10-minute periods.

Figures at left side and the black line show the amount of carbonic acid present from the opening to the close of school, including short recesses.

The dotted line near bottom represents the carbonic acid present in the out-door air.

Thus, at 11 A. M. there were present 54 scholars, and there were 7.2 parts per 1,000 of carbonic acid in the air of the room;

at ten minutes past 11, after a short recess, in which doors were open and the number of scholars reduced to 16, there were but 6.5 parts per 1,000 of carbonic acid, the out-door air remaining the same throughout the whole time.

Another quality of the air to which a certain amount of sanitary importance has hitherto been attributed is its moisture, and various devices have been contrived as attachments to heating apparatus for the constant supply of moisture to the air. The actual importance of this quality of the air has undoubtedly been exaggerated. In many elevated regions persons live in a dry atmosphere without ill effects. Disagreeable sensations attributed to dryness of the air are believed to be due in a great measure to insufficient supply.*

The evaporation of water in hot-air furnaces is often a source of great nuisance, in consequence of the organic residue which is usually present in domestic water supplies, which soon becomes offensive in consequence of its concentration and charring by the process of evaporation.

The provision of an abundant supply of fresh, out-door air, and the regulation of the temperature at a point not too high, will usually furnish an amount of moisture which is sufficient for health as well as for comfort.

SOURCES OF AIR SUPPLY.

3. The proper source is always the out-door air; and the fresh-air inlets, whether to the air-ducts of furnaces or to the indirect coils of steam apparatus, or directly through the walls of apartments, should not be in the proximity of smoky chimneys, stables, and other generators of noxious odors, and especially should they be removed from the neighborhood of vaults, cesspools, and sewers. Too often have we found schoolhouses arranged with fine, sunny exposure to the southward, and at the same time the fresh-air inlets immediately adjoining some malodorous appendages upon the opposite side of the structure. Too often, also, is the air supply obtained from the cellar, and in some of the schoolhouses in our largest cities, otherwise well designed, special provision is made in the fresh-air inlets for openings into

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* Dr. Billings on Ventilation and Heating, p. 62.

basement or cellar, and also for closing the outside openings. It is needless to add that the average janitor will invariably use the former instead of the latter. Such a practice is especially objectionable when the water-closets are located in the cellar, a custom which should not be tolerated without absolute perfection as to the character, arrangement, and construction of these fixtures.

Additional security would be provided if it were required that all fresh-air inlet shafts, in passing through cellars or other places where the air is of a doubtful quality, should be made of brick lined with cement, and made thoroughly tight. Wooden shafts in such places are constantly liable to shrinkage and consequent leaks, whereby the air of the cellar is drawn into them and thence to the rooms above.

The success of any plan of ventilation must depend very much upon the intelligence and faithful performance of duty on the part of the janitors. Too often are they influenced by a false economy in the use of fuel.

In this connection it should be said that thorough ventilation, especially in cold weather, — that is, an abundant supply of fresh air sufficiently warmed, — cannot be attained without a liberal outlay for fuel. Parsimony and good ventilation are not compatible. Dr. Parkes says that the practical limit of purity of the air will depend on the cost which men are willing to pay for it.

The following extract from "The Sanitary Engineer" of January 29, 1887, is by no means overdrawn:

> Securing the contract for engineering and erecting the apparatus, the writer gave to it earnest study and attention, having constantly in view the results contemplated by the architect, namely, a uniform temperature in all parts of the building and a constant change of air without perceptible draught. These results were obtained, and the official tests on exceptionally cold days were so satisfactory as to elicit from the architect a report to the board which was very flattering to the engineer.
>
> But glory is a perishable article if intrusted to the keeping of the average school janitor. The first appointee of the board was a man possessed of good common sense, for after wrestling with the problem of ventilation during one season and finding his abilities overrated in the appointment, he resigned, and was succeeded by one who had the recommendation of numberless best citizens. He took the position early in the summer, and matters ran smoothly with him till cold weather necessitated heat. For the sake of humanity (and the

engineer) I sent word to him that it would be my pleasure to explain to him the working of the apparatus or send a man to start it; but he informed me that he had paid his predecessor five dollars to show him about it, and he guessed he could get along. Well, he did get along and so did the complaints. Meeting him, I inquired how he succeeded.

"All right," he replied; "only send a man to fix one of them things that shuts off the water."

"What do you mean?"

"Why, there is two of 'em on every coil; one is for steam and one is for water, and this one turns round and round, and you might turn on it a week and do no good."

"Oh," I replied, "you mean one of the return valves is out of order; probably the wheel is loose from the stem or the disk is off. I will have it repaired."

Humanity and the engineer suggested that I had better go to the building and investigate matters generally. I found the temperature in the first-story hall about 100 degrees, the heat rushing out through the ventilation registers, and the place just fit for an incubator. In fact, it did hatch an idea, and that was that the vent shaft was closed, and so I called the janitor and mounted to the tower.

The door leading to the attic was wide open. I said:

"Mr. Janitor, this should always be kept closed. It weakens the draught in your vent shaft when open."

"I know it," he replied, "but I ain't touched it. It's just as Dan left it."

Looking further I found one of the dampers closed and the other two partly so. I said, "These dampers should be open when the apparatus is running."

"I know it, but I ain't been up here since Dan left, and he must have run 'em so all last winter."

An insatiable desire to tell the man something he did not know took possession of me, and so I went to one of the vacant class-rooms and on the blackboard drew a simple sketch of the apparatus, and traced the current from the cold-air duct to tower by arrows. I had barely finished before he remarked:

"I understand all that."

It was clear that here was a lucid delineator, an apt scholar, or a descendant of Ananias.

The next move was to the boiler-room. There was a roaring fire under one boiler. The gauge indicated fifteen pounds pressure. I remarked that it was not necessary to carry so high a pressure. The apparatus would circulate at any pressure.

"I know it; but sometimes she goes up, and then again she goes down; you can't keep her steady anywhere. The chimney ain't right."

One of my men fired this boiler for two weeks and found no trouble, and so I began an investigation. The difficulty was soon found. The damper-handle had worked off and had been replaced, but the wrong way, for when the pressure increased, the regulator opened the damper, and *vice versa*. This was soon righted. I then observed that the gauge on the boiler not in use indicated fifteen pounds pressure.

"Why is that, Mr. Janitor?" I asked.

"That's nothing but air," he replied; "it often does that."

Finding a pipe leading to the boiler quite hot, I inquired if the valves on the return from the coil in the ventilating shaft were properly adjusted.

"Oh, yes; they are just as Dan used them; they are all right."

It required an ocular demonstration to convince him that they were all wrong, and that he was running the water of condensation to the cold boiler, for he persisted in his assertion until, at my request, he raised the safety valve and nearly lost his equilibrium in his effort to escape the blast of steam which followed. He concluded that he had been on the defensive long enough, and so he opened fire with,

"Say, Mr. Engineer, that pump you put here to take the water out of the coils has never worked once since I came."

"There is no pump here," I replied.

"Yes, there is; this little one on the side of the boiler," said he, placing his hand on the injector.

"Have you tried to get the water out of the coils with this?"

"Yes, but it don't work, and it's no use to try to get the water back into the boiler; that thing don't put it there. So, to keep the coils from getting full, I keep this cock open and let it run into the sewer."

I said this injector was not placed here for that purpose, but only for use in case of an emergency. "If by any accident (?), such as occurred to your damper-regulator, the pressure should exceed the city water pressure, and it should be necessary to feed, the injector would be serviceable. But it is not intended to work at low pressure, and there is no occasion for it. Further, the water of condensation in this apparatus will all return to the boilers by gravity if you will allow it to do so. You had better allow me to send my man here to straighten out matters for a day or two."

"Send him to fix that val; that's all I want of him. And there is another thing to fix, one of the little pipes in front of the coils that I open to let water out don't work; he can do that at the same time."

"Let me see to what you refer," said I, and he led the way to the heating chamber. "These are automatic air-valves. What do you do with them?" I asked.

"I open 'em every night and shut 'em every morning, and I tell you it's a big job, for there's a lot of 'em."

This is not overdrawn; it is all true, and the members of the board in charge have been advised. Here is an apparatus designed for and capable of securing all the comfort that can be obtained from an agreeable temperature and a pure air, costing a large sum of money, placed in charge of an ignorant, pretentious fellow. In his charge, in a basement under a school containing four hundred children and their teachers, are two horizontal tubular boilers, very safe in the hands of a capable, trustworthy man, but a very engine of destruction under certain conditions. Where will the responsibility rest if those conditions are developed?

METHODS OF SUPPLY.

4. The object of this paper being rather to show the necessity of a pure air supply than the modes of furnishing it, this division of the subject will be dealt with briefly.

As to the point or elevation at which vitiated air should be withdrawn from an apartment, less importance is attached to the question than was given to it previous to the discovery of the law of diffusion of gases. Dr. Billings gives the following simple rules relative to ventilating plans:

(*a*) The fresh-air registers should be in such positions and of such size that the requisite amount of air can be introduced without causing currents of air of such velocity as will cause discomfort to the occupants.

(*b*) Fresh-air registers for introduction of warm air should not be placed below foul-air registers, unless the former are scattered at various points, thus preventing the formation of direct currents between the two, so that but little change is effected in the general mass of air in the room.

(*c*) Flues of proper size cannot usually be placed in thin partition walls.

(*d*) Fresh-air registers should not be placed in the floor so as to be flush with its surface. Dust and dirt are dropped into them and again returned to the room by currents of air.

(*e*) In buildings of moderate size it is economical to centralize the heating apparatus as much as possible.

(*f*) Most modern French engineers advise that the fresh air be introduced near the ceiling and that the outlets be near the floor. The object of this is to prevent unpleasant air-draughts. It is not absolutely essential, however, since by making the inlets of larger size objectionable currents of air may be avoided.

(*g*) For a thorough distribution of the air the outlets should be on the side opposite to the inlets and as far as possible from them. In dwelling-houses, especially where the number of occupants is small, a good air supply may be furnished by placing the fresh warm-air openings in an inner wall and the outlets in the same wall at the same or a lower level.

Currents in air outlets may be facilitated by the aid of heat by the introduction of a single gas-burner or steam-coil into an upward shaft of brick or iron, or by placing such shaft by the side of, or inside of, a heated chimney. Open fireplaces and open grates are very efficient ventilators. It is needless to add that their efficiency depends upon their being put into active service.

Grates are now constructed which will introduce fresh air, at the same time carrying away the vitiated air of an apartment.

One of these, having a six-inch inlet duct, was found to admit about four thousand cubic feet of fresh air per hour to a small dining-room, a brisk fire burning in the grate, and the outer and inner temperature showing a difference of about fifty degrees Fahrenheit.

FORCED VENTILATION.

In large buildings an abundant air supply may be secured by means of steam or other power, employed either to force air inward by means of a fan or blower, or for withdrawing it by a similar device. The latter method is at present applied to the ventilation of several schoolhouses in Boston, the fan being placed just below the cupola of the building, at which point shafts converge from each of the school-rooms. This plan requires the services of an engineer, but economy may be secured by combining the offices of engineer and janitor in one person. An objection to this method by aspiration is its liability to draw into and through the occupied school-rooms air from the cellar or other objectionable places — an accident which cannot so easily occur under the use of the plenum method. In the schoolhouses in question, great care is taken to provide separate ventilation for the water-closets independently of the general plan.

It should be borne in mind that especially in cold weather, with considerable difference between outside and inside temperatures, a constant transmission of air takes place through the walls, ceilings, floors, and around doors and windows, amounting, in some instances, to several times the entire cubic air contents of a room in twenty-four hours.

In some experiments performed upon illuminating gases by the State Board of Health of Massachusetts, it was found that in admitting unburned, illuminating gas at the rate of fifteen feet per hour for eight hours into a closed room of twelve hundred cubic feet capacity, — making ten per cent of the contents of the room, — several samples of the air of the room were taken and examined, none of which showed more than one per cent of gas, and the average of five samples had but six tenths of one per cent of gas, thus proving that a constant escape had taken place, through the walls of the room, equal to several times the entire contents of the room, and without any special provision for ventilation.

SMALLER SCHOOL BUILDINGS.

In what I have already stated, reference has been made to ventilation as provided by special means in connection with heating apparatus for schoolhouses capable of accommodating one hundred scholars or more, or for other large public buildings, such as are met with in cities and large towns.

In popular treatises on school hygiene, an undue share of attention is devoted to the schools of populous communities. Details of construction are given relative to buildings of three or four stories, with accommodations for two hundred scholars and upwards. But the majority of scholars in this State, and also in the whole country, live in small towns and villages, mostly in sparsely settled districts, attending schools in small buildings, each containing one or two rooms at the most.* The sanitation of this class of buildings is therefore a matter of importance quite as great as that of buildings of a larger class, and methods must be devised to furnish a fresh air supply for such structures, where hot water and steam-heating apparatus are out of the question.

The use of ventilators with direct openings through the outer walls, properly protected to exclude rain or snow; jacketed stoves, with provision for an inflow of air from without, and also for the withdrawal of the vitiated air by means of a shaft at the sides of the chimney, or by the use of the chimney itself, — the stove (or smoke) pipe being made to run through the length of the chimney, thus converting it into a heated air-duct, — are means which suggest themselves as occasion may require. No plan of a public building, no matter how small, is complete which does not include provision for the constant renewal of its air supply.

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* A commendable departure from the usual method of treating the subject may be found in the Sixth Annual Report of the State Board of Health of Connecticut (1883), entitled "The District Schoolhouse," by Dr. D. F. Lincoln.

The windows may also be made to furnish an air supply by means of strips of wood a few inches in width placed under the lower sash, thus allowing an air current to enter upward in the narrow space between the sashes. These will not usually produce unpleasant air currents to the occupants of neighboring seats, unless they are located very near the windows.

METHODS OF ESTIMATING THE QUANTITY AND THE QUALITY OF AIR.

5. In the first place, as a prerequisite to accurate observation, the dimensions of every occupied apartment in public buildings; the position and sectional area of all fresh-air inlets and foul-air outlets; the number and size of doors and windows in each room, should be known to the authorities having in charge the inspection of such buildings.

A few simple instruments should also form a part of the apparatus of every school-room, or at least of the school board or superintendent. With an intelligent and frequent use of such means for observation, a better hygienic condition of teachers and pupils in public schools, as well as of people accustomed to assemble in other public buildings, — and consequently, for the former class, a better condition for effective study as well as for the enjoyment of recreation, — would undoubtedly be secured. When we consider the length of time spent in school, we may also safely add that the amount of headaches, lassitude, nervousness, respiratory diseases, and especially consumption, will be reduced in a similar degree.

(*a*) *The Thermometer.* — The uses of this instrument are too well known to require an extended explanation. It should be found in every school-room, and teacher, janitor, superintendent of schools, and school boards should make a faithful use of it, and, in winter especially, require that the temperature of the school-room at three or four feet above the floor should be kept at a uniform temperature as near 68 degrees Fahrenheit (20° C.) as possible, this being ascertained to be, in our New England climate, an average most conducive to health and comfort.

English custom requires a lower temperature of about 60° only.

Our own habits of living in apartments at higher temperature both at home and while traveling have induced us to require higher temperatures in our school-rooms, as well as in other apartments. It was only last week that I found the air of the waiting-room at a railway station at 91° Fahrenheit in the northwest corner of the room four feet above the floor and eight feet from the stove, and the out-door air at the same time at zero. On the following day I found also the air of a railway passenger car at 85°. In both places men were sitting with hats and thick overcoats on, and doubtless wondering why the death-rate from acute lung diseases should be so much higher in January than it is in June. The amount of carbonic acid present in the same car at the same time was found to be five times as great as that of the out-door air by actual determination.

Thermometers should not be used for mere ornament, and the janitor especially should be taught their proper use. Examinations of the temperature at the bottom of the room, as well as that of other strata of the air up to six feet or more, should also occasionally be made. Warm feet are essential to health and comfort, and they cannot well exist when the lower stratum is fifteen or twenty degrees lower than that at the level of four or five feet from the floor.

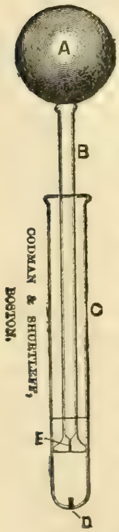
As a minor matter, I would suggest that the Centigrade be substituted for the Fahrenheit thermometer, as one whose scale is based upon an intelligible standard, and also one of universal application.

The thermometer is an indicator of conditions which pertain to comfort more than to health. There are occupations which require daily toil in atmospheres of a temperature as high as 140 or 150 degrees Fahrenheit, and such men remain in a condition of robust health, if not one of comfort.

(*b*) *The air-tester* has for its office the measurement of the purity of the air, and hence it is more important from a hygienic standpoint than the thermometer.

Several forms of apparatus have been devised for the determination of the ratio of carbonic acid present in the air of a given apartment, this being the only known index of the impurity of the air.

The instruments in common use are mostly large, inconvenient, and not adapted to the needs of an unskilled observer. Such are Lange's method, and the recent ingenious instrument devised by Mr. F. N. Owen, of New York, and illustrated in Dr. Billings's work on ventilation.



I have endeavored to find an apparatus which, while not possessing the merit of strict accuracy, should be at once portable and capable of ready application. Such an one may be found in Wolpert's air-tester, which answers fairly well the purposes for which it was devised. Any one can readily use this instrument with but little practice.

For amounts beyond twenty parts of carbonic acid per ten thousand, the instrument is of little use, in consequence of its want of accuracy. Two or three minutes are sufficient for a single observation, and a shorter time if the air is unusually vitiated. Care should especially be taken, in using any of the instruments for this purpose, to remove them as far as possible from the breath of the observer or any other occupants of the place of observation.

(*c*) For larger buildings, with heating shafts and fresh-air flues and outlets for vitiated air, the air-meter will be found of much service. For this purpose there is no better instrument than Casella's, all of whose instruments are corrected and indicate the number of feet of air passing through a shaft in a given sectional area in a given period of time. This

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† For description of Wolpert's air-tester, see Centralblatt fur allg. Gesundheitspflege, vol. 2, p. 231. Also *Boston Medical and Surgical Journal*, vol. 115, No. 6, p. 131.

instrument is readily applied, and will at once indicate how much fresh air is entering a given apartment; and the estimate *per capita* may easily be made.

(*d*) *Hygrometer.* — The relative humidity of the air may be found by means of any of the various forms of instruments invented for this purpose, such as Daniell's, Régnault's, or that made by Huddleston. These instruments consist of two thermometers, one having its bulb exposed directly to the air, and the other being moistened in such a manner as to allow free evaporation. Hygrometric tables accompany them, by means of which either the dew-point or the relative humidity of the air is determined by calculation.

TABULATION OF RESULTS.

Systematic methods of observation tend to establish habits of greater accuracy on the part of the observer, and also render the adoption of measures for the relief or remedying of defects more probable. For such purposes the valuable tables recently published by Professor Rietschel, of Berlin, offer unusual advantages for accurate and careful observation. These are classified under four heads:

1. Carbonic acid.
2. Air velocity.
3. Temperature.
4. Moisture.

Under (1) are included the name of school examined; date, day and year; weather, direction of wind, height of barometer, pressure; grade of school; cubic air-space, story of structure; windows, single or double; temperature of air out-doors, temperature of air in-doors, moisture of air out-doors, moisture of air in-doors; number of scholars present; observations upon the carbonic acid at intervals of five, ten, and fifteen minutes in the room; carbonic acid in out-door air; position of ventilators, inlet shaft, outlet shaft, upper opening; outlet shaft, lower opening; door, open or shut.

(2) *Velocity* of air currents; temperature of out-door air; temperature of air in inlet duct, temperature of air in outlet duct;

velocity of air in meters with inlet and outlet ducts open, observations taken in each; area of ducts, inlet, outlet.

(3) *Temperature* at twenty-seven different points in each room, at three different heights, with inlet shaft open and shut.

(4) *Moisture* of outer air, moisture of inner air under different conditions, with ducts open and shut.

6. — WHAT ARE THE EFFECTS OF IMPURE AIR UPON THE OCCUPANTS OF APARTMENTS HAVING A LIMITED FRESH-AIR SUPPLY, OR NONE AT ALL?

No specific disease can be attributed to this cause, such, for example, as may occur by exposure to the contagion of scarlet fever or measles. The results of such exposure to constant pollution of the air by the products of respiration and combustion are mainly an increased tendency to diseases of the respiratory organs, and especially to pulmonary consumption. Dr. B. W. Richardson states that exposure to one per cent of carbonic acid induced painful and distressing phenomena, such as frontal headache, dizziness, nausea, drowsiness, and faintness. Long exposure to smaller amounts also induces impaired appetite, weakened digestion, and deranged secretion. In the healthy these symptoms readily pass away on exposure to pure, out-door air; but those who are predisposed by inheritance to consumption are especially injured, and many of the most intensely developed examples of pulmonary consumption are induced in this manner.*

In the case of a large number of persons confined in a small, tightly closed space, death may ensue even in so short a period as two hours, as certain historic instances both on land and on shipboard have proven.

That the communication of infectious diseases is promoted by the confined air of illy ventilated apartments there can be no doubt, and a constant and sufficient renewal of such air tends to remove the infectious material and convey it to the outer air, where, by its enormous dilution, it is far less likely to do harm.

The infectious nature of pulmonary consumption is yearly receiving more abundant proofs, and the constant exposure of persons to an atmosphere laden with the impure products of respiration from others who may be already the victims of this disease is undoubtedly one of the modes of infection.

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* "Diseases of Modern Life," Dr. B. W. Richardson, p. 207.

A brief reference to certain statistical tables will throw further light upon this point.

In the registration reports of Massachusetts, which cover a period of nearly forty-five years, the length of life of 221,000 persons is given as classified in groups by occupations. The average of these is 51+ years. The average age of farmers was 66+ years. On the contrary, the average age of shoemakers was 46+ years. It is a significant fact that the age of the latter class has increased considerably within the past twenty years. Formerly the New England shoemaker performed his work under the worst possible conditions, one or more persons working in an extremely small shop, frequently having less than three hundred cubic feet of air-space, the air heated by a stove, with no provision for ventilation, and the workman conducting his work in a cramped position. These conditions have become greatly changed, and men work in large and often better ventilated work-shops, and in a standing position. The same is also true of other in-door occupations.

MEDICAL SUPERVISION OF SCHOOLS.

The principles which I have sought to illustrate in this paper furnish but a small portion of the reasons for a constant and careful supervision of public buildings, and especially of public schools, by a trained sanitary officer in every State and large city in the Union. So far as the schools are concerned, such an officer could perform his duties independently of or in conjunction with an educational board.

It is not necessary to carry such work to the extent of medical treatment of the scholar, as is done by Dr. Janssens, of Brussels, in the case of the feeble and poorly developed ; it is, however, essential to make their surroundings, while in the school-room, as perfect as possible. For such work the schools of the United States, with their five or ten millions of scholars, present a wide and fruitful field of labor.

ABSTRACT OF DISCUSSION.

Dr. Irving A. Watson, Secretary State Board of Health, said: "I think the importance of good ventilation, especially in our school-rooms, cannot be overestimated. It is a question which we have been considering in this State, and have been making some investigations relative to the amount of air-space and the means of ventilation in our common schools. The results so far obtained show a very great deficiency in the matter of ventilation; in fact, a large majority of the school-rooms are mere boxes. The question is indeed a serious one, and there is no doubt that some supervision of our schools should be exercised by state authority. I believe that certain plans should be agreed upon, and their adoption should be made obligatory in the construction of all school buildings. I am glad to know that the subject is being considered by the authorities of other States, as Dr. Abbott has shown. I think it is a matter of time only when the legislators of the country will consider the question in all its bearings, and enact such laws as will bring about a change."

Dr. D. M. Currier, of Newport, said he believed buildings could be ventilated with a minimum loss of heat if the ventilating flues are properly arranged. With the hot-air register in the floor and the register for the outgoing air overhead, there is necessarily a great loss of heat; but if both registers are on a level with the floor, you not only economize the heat, but also secure good ventilation.

PHYSICAL EDUCATION IN PUBLIC AND PREPARATORY SCHOOLS.

BY EDWARD HUNTINGTON FALLOWS, DIRECTOR OF THE PHILLIPS (EXETER) GYMNASIUM, EXETER, N. H.

"Elegance of form in the human figure," says Emerson, "marks some excellence of structure."

In this scientific age, when the microscope of the biologist and the scalpel of the physiologist are so carefully analyzing and accurately determining the functions and relations of the various systems and organisms which combine to form a man, it is scarcely necessary to make a plea in behalf of physical education. Few physicians or educators can now be found to depreciate the great value of a well-developed physique, and of the increased power it confers on its possessor for work of any kind. President

Stearns has said: "Without the support of well-developed bodily powers and functions, the mental faculties cannot reach their full development," a truth that is emphasized every day in the experience of teachers and physicians, and illustrated in the lives of neighbors and friends.

"The brain is composed of flesh and blood, subject to physiological law, and is not a spiritual organ controlled by laws beyond our reach. Its first need is an abundance of good blood. It is fundamental in the physiology of the brain that the blood shall be pure. If we lessen the supply of blood to the brain, or send poor, thin, badly oxygenated blood there, the organ will act feebly."* But good, pure blood courses through the arteries only when the respiratory, nutritive, and excretory systems are in healthful condition and harmonious relation.

"Exercise alone, of all the agents of growth and development, can be regarded in an educational light, — alone is capable of being permanently systematized and administered as a means of progressive bodily culture."† Exercise not only increases the size and functional capacity of the voluntary and involuntary muscles, but by quickening circulation and increasing respiration it promotes the health and strength of the whole man. How important then, that during its growth, at a time when the reparatory forces are in excess of the destructive, the body should have the training requisite to render it a fit casket for the immortal gem God has given it. The vital importance of the teaching contained in the well-worn adage, *Mens sana in corpore sano*, should be impressed upon the minds of the overworked and undergrown boys and girls in our public schools and academies.

William Blaikie, in his valuable book on "How to get Strong," says: "Let him who thinks the average American boy would fare as well as his English cousin in Rugby (who makes nothing of a six-mile run) go down to the public bath-house, and look carefully at a hundred or two of them as they tumble about in the water. He will see more big heads and slim necks, more poor legs and skinny arms, and lanky, half-built bodies than he would have ever imagined the whole neighborhood could produce.

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* From "Hygiene of the Brain," by Dr. M. L. Holbrook.

† "Physical Education," by Maclaren.

Or he need not see them stripped. One of our leading metropolitan journals, in an editorial recently, headed 'Give the boy a chance,' said: 'About one in ten of all the boys in the Union are living in New York and the large cities immediately adjacent, and there are even more within the limits of Philadelphia, Boston, Chicago, and the other American cities whose population exceeds a hundred thousand. The wits of these millions of boys are being forced to their extreme capacity, whether they are taught in the school, the shop, or the street. But what is being done for their bodies? The answer may be obtained by standing at the door of almost any public or private school or academy at the hour of dismissal. The inquirer will see a crowd of undersized, listless, thin-faced children, with scarcely any promise of manhood about them.' "

Herbert Spencer says: "On women the effects of this forcing system are, if possible, even more injurious than on men. Being in a great measure debarred from those vigorous and enjoyable exercises of body by which boys mitigate the evils of excessive study, girls feel these evils in their full intensity. Hence the much smaller proportion of them who grow up well made and healthy. In the pale, angular, flat-chested young ladies, so abundant in London drawing-rooms, we see the effect of merciless application unrelieved by youthful sports; and this physical degeneracy exhibited by them hinders their welfare far more than their many accomplishments can aid it."

Narrow, flat chests, stooping shoulders, weak backs, and curved spines, the danger signals of consumption and other chronic diseases, are the rule among American school children. And I say *American* school children, for the *German* boys and girls in this country are so much more healthy and sturdy that you could enter a public school in New York city and separate the two classes with ease. And why do the German youth excel their American playmates? Because the German people in this country have formed the largest association of turners in the world, outside of the Deutsche Turnershaft, under the name of the North American Gymnastic Union, with the grand aim of "aiding each other in rearing a people strong in both body and mind." In January, 1885, this union had a total membership of twenty-one thousand eight hundred and nine, and in the turning schools of the union during the year 1884–85 twelve thousand two hundred and twenty-eight boys and four thousand and five girls received instruction in gymnastics.

Systematic physical culture was introduced into the public schools of Kansas City in October, 1885, by Carl Bety, who offered to teach and superintend the exercises in all the schools gratuitously for a term of three months. In December of the same year he was appointed superintendent of physical culture by the board of education. He has been very successful in his work, and has placed physical education on a firm basis in Kansas City. Prof. Bety has published a manual of free gymnastics, which is used in the schools. The exercises are identical with those of the German system, although the arrangement is changed to suit different conditions. Prof. Bety has kindly written the following letter, explaining his method of work:

"The work in our schools is now fifteen months old. In Chicago systematic bodily culture has been introduced into the public schools only since last September. Our plan of construction at present is the following: On every Saturday the director of physical training drills the principals of the different ward schools. These in turn drill their assistants, the regular teachers, on every Monday. The assistants take up the new drill for the week on every Tuesday. The drill is obligatory, and is taken as any of the other studies. At 10 o'clock A. M. all principals strike a gong, and at this signal all teachers take up the drill at once (daily). Thus at the same time all school children throughout the city have the same exercise. Each teacher is furnished with a manual of instruction, which clearly marks the work to be accomplished. The scholars of course do not leave the school-room. The assistant teachers are required to make a daily report of the work, and at the end of each school week hand them to their respective principals. The principals make a monthly report to the director, who reports on the entire work to the board. As yet we have only free gymnastics, but as soon as possible dumb-bells, wands, poles, rings, and clubs will follow. Then gymnastic games and popular gymnastics will be taken up, and lastly heavy gymnastics on apparatus."

As Prof. Bety writes in his letter, Chicago has fallen into line with Kansas City, and adopted a like system of free gymnastics. The work is under the direction of Mr. Henry Suder. There are eight teachers employed, who visit each grammar-grade room twice a week. The regular teachers give instruction upon other days. A pamphlet has been printed for the use of the teachers, containing lessons for each week of the school year. It is not possible yet to make a report on the success of the work in Chicago, but as the system adopted there corresponds closely to the German system used by Carl Bety, the result cannot be doubtful. In fact, this is the system that must be used wherever physical training is introduced into public schools as at present constituted, unless radical changes are made in the construction of buildings, and large sums of money expended for apparatus. It fulfills nearly all the ends of true exercise by securing the interest of the child, by bringing the principal muscles of the body into energetic action, thus stimulating the action of the heart and lungs and increasing the circulation and respiration, and by toning up the nervous system through the co-operation and co-ordination of the muscles.

Dr. Edward M. Hartwell, of the Johns Hopkins University, favors strongly the German system of gymnastics. In his valuable and exhaustive report recently published, on "Physical Training in American Colleges and Universities," he writes:

"If physical training should ever be pursued intelligently and systematically in the schools of any American State or city, many of the same problems with which the educational authorities in Germany, Switzerland, Sweden, and France have been so deeply engaged will inevitably present themselves. The writer is far from thinking that such problems can be satisfactorily solved by the attempted introduction of any unmodified foreign system of gymnastics or athletics, but he is firmly convinced that whoever may be impelled or called upon to attempt to provide an adequate remedy for the present lamentable neglect of physical training in American schools and colleges can readily save money, time, and trouble if they will but study the German system of turning, for there can be no doubt, to borrow the words of Prof. Du Bois-Reymond, that German turning, in its wise mingling of theory and practice, exhibits the happiest, yes, the most adequate solution of the great problem with which pedagogics has been busy since Rousseau, a truth which, after a short obscurity, is now hardly contested, but the physiological principle of which a few are beginning to understand."

During the school year 1883–84 there was an average daily attendance in the public schools of this country of six million five hundred twenty-five thousand seven hundred fifty-six. Of this number only seventy-six thousand five hundred twelve pupils, representing the attendance in the public schools of Kansas City and Chicago, and in the North American Gymnastic Union, receive any systematic physical training.* But one child in every hundred is given any opportunity to attain a full development of its mental faculties. To educators and sanitarists this is a fact for serious consideration.

Of the work in college preparatory schools proper a few words are in order, although I have preferred to devote the greater portion of my time to the more general question of physical training for children.

For youths who are planning out a professional career and are intending to make large use of their mental powers, a strong muscular and a well-organized nervous system are all important. Without a robust constitution to support the exhausted nervous centers, severe mental strain produces insomnia, and, finally, that curse of modern civilization, insanity. Nature must have compensation for the excessive demands made upon her, and unless the brain-worker has stored up a supply of reserve strength on which she can draw she robs him of his reason. It is a widely known and well-attested fact that, whereas the most of the women in the insane asylums come from the ignorant classes, the majority of the male inmates belong to the "thinking" class, who have become insane through excessive brain-work, — excessive because the brain was unrelieved by healthful relaxation.

The question is on the lips of many physicians, How is the rapid increase of insanity in the United States to be checked?

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* Since the time this paper was written, Carl Bety's system of Physical Culture for Public Schools has been introduced into the schools of Yankton, Dak., Slater, Mo., and Davenport, Io.

and while it would not be possible here to give a full answer to this important question, a partial reply may be made. By introducing systematic courses of physical training into public and preparatory schools, and by making a certain degree of physical development as well as mental attainment the condition of entrance and advance. Not that a certain height or weight or amount of muscular strength should be made the gauge, for health and strength are by no means synonyms, nor always complements of each other. On the contrary, there are comparatively few people who can secure a great muscular development except at the expense of health ; and, in fact, over-development of the muscular system is often the cause of organic disarrangement and chronic disease. No, it is not so much strength that the college student needs as health ; not so much the abnormal development of one system as the harmonious development of all the systems. Few boys enter a preparatory school with sound, healthy bodies. Some are round-shouldered, others flat-chested, some weighted down by an excessive amount of adipose tissue, others elongated into bean-poles, and many have curvature of the spine. To counteract these dangerous tendencies before they develop into chronic diseases should be the first duty of a preparatory school. It is worse than folly to give a boy a gun and set him to marching, with the vain hope that in these ten or twelve pounds of wood and metal, which are depressing his shoulders, curving his spine, and overtaxing his strength, the little fellow will find a panacea for all his troubles ; and yet this is just what twenty-eight preparatory schools are doing. In fifteen of these schools some attempt is made at light gymnastic work, but in the other thirteen nothing is done for the physical welfare of the pupils. In fifty-eight out of one hundred and eighteen schools from which answers have been received, there are no gymnastic exercises of any description. In sixty schools a gymnastic drill of some kind is required, but in one half of these it is pursued at such long and irregular intervals that little good can result to the students. Among the one hundred and eighteen schools there are twenty-seven gymnasia, and twenty-eight rooms more or less extensively fitted up with apparatus. The total outlay for rooms and gymnasia has been $114,850. The gymnasia in three academies, Phillips (Andover), Williston, and Phillips (Exeter), represent $65,000 of this amount. Although it is generally conceded that a gymnasium without an instructor is worse than no gymnasium at all, not over one school in four has any physical director. But not to weary you longer with statistics, for they are proverbially dry, the result of a careful study shows that in nine tenths of the preparatory schools in this country physical education has no basis whatsoever. In only five schools of those from which there have been reports are there rational systems of physical training based upon anthropometric measurements and physical examinations. These schools are the Adelphi Academy, Brooklyn; the Preparatory School at Princeton; the Wesleyan Academy at Wilbraham, Mass.; the Hill School at Pottsdam, Penn.; and the Phillips (Exeter) Academy at Exeter, N. H. The measurements are taken in accordance with the system used by Dr. Sargent at the Hemenway Gymnasium, Harvard University, and by Dr. Hitchcock at the Pratt Gymnasium, Amherst College, and adopted by the Association for the Advancement of Physical Education at its last convention in November. It would be tedious and unprofitable to describe the system in detail, but those who are interested can obtain copies of the proceedings of the convention, containing a description of the method of taking the measurements, from Dr. William G. Anderson, of the Adelphi Academy, Brooklyn.

In our own academy each student is examined physically and measured at least once a year. On the basis of these examinations one of Dr. Sargent's hand-books of developing exercises is made out and given to each student, with exercises marked that are adapted to his individual need. This book also contains special instruction with regard to air, food, bathing, clothing, and sleep.

In addition to this individual work, which is pursued under the supervision of the director, there are required dumb-bell and chest-weight exercises for each class four times a week. The dumb-bell exercises are similar to those which have been used so successfully and with such good results by Dr. Hitchcock at Amherst. For the chest-weight exercises, Dr. Sargent's famous machines are employed, and the movements are modeled after those in use in the Hemenway Gymnasium.

Our belief is that the true object of gymnastic exercises should be not to develop athletes, but sound men; not to encourage professionalism in athletic sports, but to make them a means by which a healthy development of mind and body is secured. Therefore such exercises are given as will increase the respiration, quicken the circulation of the blood, stimulate the abdominal viscera, and make the muscles and limbs elastic. In this way, and in this way only, the gymnasium and physical exercise become valuable and necessary factors in education.

This whole question of physical education of children and youth stands closely related to questions of sanitary reform. It is not more important that the environment should be pure and wholesome than that the body itself should be clean and healthy, nor that the fuel should be of the proper kind and amount than that the bearings of the engine should be well oiled and its parts perfectly adjusted.

Thirty or forty years ago, when the gymnasium was a ten-acre lot, and the apparatus a hoe, the village fathers were not called on to devise methods for physically developing their sons and daughters. Now, in view of the growing tendency of the American people to centralization, when the boy is selling his father's farm to the foreigner, and is hastening to the city to invest his proceeds, until at the present time more than one boy in every ten is living in a large city, boards of health and boards of education have a problem to solve, affecting the future well-being of the nation.

The law of natural selection, which operates in the animal world, will not preserve the physical type of man, for civilization with its humanity and benevolence antagonizes its action, and substitutes a higher law. Under this law we build hospitals and insane asylums, we found institutions for the blind, the deaf and the dumb, we provide for foundlings and orphans. All this is right and in accordance with the teachings of Christ, but unless the powerful influence for evil these physically and mentally degenerate sufferers have on the characteristics of the race be counteracted by equally powerful influences of an elevating tendency, the noble type of American manhood, so grandly exemplified in our own Daniel Webster, will be a tradition of the past.

The State owes it to its citizens and itself to provide not only for the mental but in equal measure for the physical education of its children, that by unfolding the natural and symmetrical beauty of the human body, it may be made "fit and capable in every phase of moral life to obey and carry out the will of its supreme master, the mind."

TABLE RELATIVE TO PHYSICAL EDUCATION

Name of School.	Situation.	Gymnastic or Military Instructor.	Sex of Pupils.	Length of Course.	Average entering Age.	Entering-age Limit.
State Normal and Industrial School,	Huntsville, Ala.		Both.	11	17	14
Talladega College,	Talladega, Ala.		Both.	12	16	
Girls' High and Normal School,	San Francisco, Cal.		Girls.	5	14½	13
State Normal School,	San Jose, Cal.		Both.	3	16	
Betts Academy,	Stamford, Conn.	W. J. Betts.	Boys.	5		
Bulkeley School,	New London, Conn.		Boys.	4	14½	12
Connecticut Literary Institution,	Suffield, Conn.		Both.	4	16	
Connecticut State Normal School,	New Britain, Conn.	Miss C. W. Mingins.	Both.	2	18	16
The Sunnery,	Washington, Conn.		Both.			
Hartford Public High School,	Hartford, Conn.		Both.	4	15	12
Conference Academy,	Dover, Del.		Both.	3		
East Florida Seminary,	Gainesville, Fla.	Capt. C. A. Curtis.	Both.	4	15	12
Hilliard Institute,	Forsyth, Ga.		Boys.	12	9	
Bunker Hill Academy,	Bunker Hill, Ill.		Both.	6		
Chicago Manual Training School,	Chicago, Ill.		Boys.	3	13½	14
Chicago West Division High School,	Chicago, Ill.		Both.	4	15	12
Elgin High School,	Elgin, Ill.		Both.	4	15	12
Illinois State Normal University,	Normal, Ill.	Pres. H. J. Barton, Prin. of High School.	Both.	7	16	16
Kirkland School,	Chicago, Ill.	Col. Jas. F. Cosgrove.	Both.	14	4	
Lake Forest Academy,	Lake Forest, Ill.		Boys.	4	14	13
Southern Illinois Normal University,	Carbondale, Ill.	Lieut. J. F. Bell.	Both.	6	14½	
Davenport High School,	Davenport, Io.	Miss C. M. Ring.	Both.	4	14	
Iowa State Normal School,	Cedar Falls, Io.		Both.	4	18	16
Kansas State Normal School,	Emporia, Kan.	J. N. Wilkinson.	Both.	4	18	15
Gilbert Seminary,	Baldwin, La.		Both.	4	12	
Straight University,	New Orleans, La.		Both.	12	8	5
Brookentta Academy,	Brookentta, Me.		Boys.		9	
Coburn Classical Institute,	Waterville, Me.		Both.		15	
Hallowell Classical and Scientific Academy,	Hallowell, Me.		Both.	5	13	
Houlton Academy,	Houlton, Me.		Both.	4	15	
Maine Central Institute,	Pittsfield, Me.		Both.	4	17	
Charlotte Hall,	Charlotte, Md.		Boys.	6	14	
McDonough School,	McDonough P. O., Md.	H. L. Gantt.	Boys.			
School for Boys,	Baltimore, Md.		Boys.	6	11	10
Boston Latin School,	Boston, Mass.	Gen. Hobart Moore.	Boys.	6	12½	11
Bridgewater High School,	Bridgewater, Mass.		Both.	4	13	
Chauncey Hall School,	Boston, Mass.	Col. E. H. Hewins.	Both.	6		
English High School,	Cambridgeport, Mass.					
Greylock Institute,	So. Williamstown, Mass.	A. V. Taylor.	Boys.	6	15	12
Haverhill High School,	Haverhill, Mass.		Both.	4	15½	
Highland Military Academy,	Worcester, Mass.	Col. Baker.	Boys.	3	15	
Lawrence Academy,	Groton, Mass.		Both.	3	15	
Lawrence High School,	Lawrence, Mass.		Both.	4	14	
Newton High School,	Newton, Mass.	F. N. Brown.	Both.	4	14¾	13
Nichols Academy,	Dudley, Mass.		Both.	4	15	
Northfield Seminary,	Northfield, Mass.	Miss A. C. Northrup.	Girls.	5	17	15
Phillips Academy,	Andover, Mass.	H. M. Howland.	Boys.	4		
Powers Institute,	Bernardston, Mass.		Both.	4	14	12

IN PUBLIC AND PREPARATORY SCHOOLS.

Gymnasium?	Cost of Building and fitting up.	Calisthenics, Exercises with Bells, Clubs, or Wands, or on heavy Apparatus.	Hours per Week.	Military Drill with or without Guns.	Hours per Week.	Anthropometric Measurements.	How Many and What System.	Instruction in Hygiene.
		Calisthenics.	3					Yes
		Calisthenics, etc.		With guns.				1 t'rm
		Calisthenics, Del Sarte system of gesture.						Yes
		Dumb-bells, wands.						Yes
Yes	$300	Calisthenics.	1½	Drill.				Yes
Apparatus								Yes
Room		Calisthenics.	5	Drill.				Yes
Room		Del Sarte system.	5					Yes
Room	2,000							Yes
								Yes
								Yes
		Calisthenics.	5	With guns.	5			
		Calisthenics and gymnastics.		With guns.				Yes
		Bells, clubs, heavy gymnastics.	2			Yes	Three.	Yes
						Yes	Five.	Yes
								Yes
								Yes
Room		Clubs.						Yes
Room		Bells, wands, rings.	1½	Without guns.				Yes
Yes	400							Yes
		Calisthenics.		Both.	3			Yes
		Bells, clubs.	3					Yes
Room		Bells, clubs, wands,	1					Yes
Room		Dio Lewis's new gymnastics, bells, clubs, wands, bean-bags.	1½	Without guns.		Yes	Nine.	Yes
								Yes
		Calisthenics, bells, wands.	4					Yes
Yes	650							Yes
								Yes
Room								Yes
		Calisthenics.	3					Yes
								Yes
Room	150	Bells, clubs, rings.	1	With guns.	5			Yes
				Without guns.	2	Yes	Two.	Yes
Yes								
Room	1,500			With guns.	2			Yes
								Yes
		Dumb-bells, wands.	1	Guns.	3			Yes
Yes	2,700	Bells, clubs.	1½					Yes
								Yes
		Bells, clubs.	2	Guns.	5			Yes
Room								Yes
								Yes
		Bells.	2	Guns.	2			Yes
Room	325	Calisthenics, heavy apparatus.	2					Yes
Yes	20,000							Yes

TABLE RELATIVE TO PHYSICAL EDUCATION

Name of School.	Situations.	Gymnastic or Military Instructor.	Sex of Pupils.	Length of Course.	Average Entering Age.	Entering-age Limit.
The Sedgwick Institute,	Great Barrington, Mass.	E. J. Van Lennep, A. W. Rimington.	Boys.			
Roxbury Latin School,	Roxbury, Mass.		Boys.	6	12	11
St. Mark's School,	Southborough, Mass.		Boys.	6	12	12
Springfield Collegiate Institute,	Springfield, Mass.		Both.	4	13	
Thayer Academy,	Brainton, Mass.		Both.	4	16	13
West Newton English and Classical School,	West Newton, Mass.		Both.	8	13	8
Williston Seminary,	Easthampton, Mass.		Boys.	4	16	
Worcester Academy,	Worcester, Mass.		Boys.	4	13	
Worcester High School,	Worcester, Mass.		Both.	5	15	11
Minneapolis Academy,	Minneapolis, Minn.		Both.	4	14	
Pass Christian Institute,	Pass Christian, Miss.	Miss N. F. Tilton.	Girls.	10	7	
Tongaloo University,	Tongaloo, Miss.		Both.	12	15	
Bellevue Collegiate Institute,	Caledonia, Mo.		Both.	4	15	
Marionville Collegiate Institute,	Marionville, Mo.		Both.	3	15	
Park College,	Parkville, Mo.		Both.	9	15	14
Bingham School,	Mebane, N. C.	Capt. J. A. Montgomery, Lieut. H. Wygant.	Boys.	4	14	
Shaw University,	Raleigh, N. C.		Both.	4	20	16
Colby Academy,	New London, N. H.		Both.	4	17	14
Gilmanton Academy,	Gilmanton, N. H.		Both.	3	16	
Great Falls High School,	Great Falls, N. H.		Both.	4	14	
Hampstead High School,	Hampstead, N. H.		Both.	3	14	12
Keene High School.	Keene, N. H.		Both.	4	14	
Kingston Academy,	Kingston, N. H.		Both.		14	
Milford High School,	Milford, N. H.		Both.	4	14	
Nashua High School,	Nashua, N. H.	Gen. E. Wheeler.	Both.	4	14	
Newport High School,	Newport, N. H.		Both.	4	14	
Pembroke Academy,	Suncook, N. H.		Both.	4	15	
Phillips (Exeter) Academy,	Exeter, N. H.	Edw. H. Fallows.	Boys.	4	15	12
Portsmouth High School,	Portsmouth, N. H.		Both.	4	13½	
Proctor Academy,	Andover, N. H.		Both.	4	16	12
Rochester High School,	Rochester, N. H.		Both.	4	14	
Hasbruch Institute,	Jersey City, N. J.	Louis Kline.	Both.		12	8
Peddie Institute,	Hightstown, N. J.	Howard Hanson.	Both.	4	15	
Preparatory School,	Princeton, N. J.	Principal.	Boys.	4	13	12
Adelphi Academy,	Brooklyn, N. Y.	Wm. G. Anderson, M.D.	Both.	14	7	
Canandaigua Academy,	Canandaigua, N. Y.	Lieut. J. C. Fredenburg.	Boys.	4	14	
Cazenovia Seminary,	Cazenovia, N. Y.		Both.	3	16	
Claverack College and Hudson River Institute,	Claverack, N. Y.	Miss Carrie Parsons, Rev. A. H. Flack.	Both.	7	16	
Clinton Grammar School,	Clinton, N. Y.	Principal.	Boys.	6	14	

IN PUBLIC AND PREPARATORY SCHOOLS. — *Continued.*

Gymnasium?	Cost of Building and fitting up.	Calisthenics, Exercises with Bells, Clubs, or Wands, or on heavy Apparatus.	Hours per Week.	Military Drill with or without Guns.	Hours per Week.	Anthropometric Measurements.	How Many and What System.	Instruction in Hygiene.
Room		Calisthenics, clubs, and heavy apparatus.	4					Yes
Yes	$3,000	Bells.	1½	Guns.	1½			Yes
Yes	500	Bells, clubs, bar.						Yes
	20,000	Calisthenics, heavy apparatus.	2					Yes
Yes	1,200	Bells, clubs.	1					Yes
		Calisthenics, bells.						Yes
Hall		Calisthenics.	1½					Yes
		Calisthenics.						Yes
								Yes
		Calisthenics.	1					Yes
		Manual Labor.	15					Yes
Yes	2,500	Calisthenics and heavy apparatus.	½	Guns.	4			Yes
Room		Industrial work.	14					Yes
Yes	1,500							Yes
								Yes
								Yes
								Yes
Room	100							Yes
Room	300							Yes
								Yes
		Calisthenics.	1	Both.	1			Yes
								Yes
		Calisthenics.						Yes
Yes	25,000	Calisthenics, bells, chest-weights, heavy appar.	4	Without guns.		Yes	System adopted by the American Association for Advancement of Physical Education, now used at Harvard, Amherst, Williams, Johns Hopkins, etc.	Yes
-								Yes
Room	125	Calisthenics.	1½					Yes
								Yes
								Yes
Yes	2,000	Bells, clubs, wands, bar.	3					Yes
Room	150			Guns.	2			Yes
Yes	5,000	Clubs, general gym.	2			Yes	Dr. Sargent's.	
Room		Bells, clubs, rings, single stick, heavy work.	1¼	Without guns.		Yes	Same as at Phillips (Exeter) Academy.	Yes
Yes				Without guns.	1			Yes
Room		Bells, clubs, wands.	2½					Yes
Yes		Calisthenics, bells, wands, rings.	3¼	Guns.	3¼			Yes
Yes	500			Without guns.				Yes

TABLE RELATING TO PHYSICAL EDUCATION

Name of School.	Situations.	Gymnastic or Military Instructor.	Sex of Pupils.	Length of Course.	Average Entering Age.	Entering-age Limit.
Colgate Academy,	Hamilton, N. Y.		Boys.	4	17	
Columbia Grammar School,	Columbia, N. Y.	T. F. Uhewell.	Boys.	10	8	8
Cook Academy,	Havana, N. Y.		Both.	4	16	14
Croton Military Institute,	Croton-on-the-Hudson, N. Y.	Capt. W. W. Warren.	Boys.	4	15	
De Veaux College,	Suspension Bridge, N. Y.	H. B. Looker.	Boys.	6	14	
Dr. Holbrook's Military School,	Sing Sing, N. Y.	Maj. D. B. Holbrook.	Boys.	6	13	
Ithaca High School,	Ithaca, N. Y.		Both.	4	15	
John McMullen's School,	New York.		Boys.	7		
Poughkeepsie Military Institute,	Poughkeepsie, N. Y.	Maj. F. B. Waring.	Boys.	4	14	
St. John's School,	New York.	Prof. A. C. Bamham.	Girls.	13	6	3
Siglar's Preparatory School,	Newburgh, N. Y.	A. L. Fellows.	Boys.	6	15	
Stevens High School,	Hoboken, N. Y.	F. L. Levenoak.	Boys.	5	12	
U. S. Military Academy,	West Point, N. Y.		Boys.	4	19	17–22
Broad Street Academy,	Philadelphia, Pa.	Prof. Barrett, Mr. W. Ivers.	Boys.	10	6	
Germantown Academy,	Philadelphia, Pa.		Boys.	5	13	
The Hill School,	Pottstown, Pa.	Walter C. Roe, Maj. H. A. Shendon.	Boys.	4	14	
Wyoming Seminary,	Kingston, Pa.		Both.	4	16	13
Rugby Academy,	Philadelphia, Pa.	Wm. H. Barrett.	Boys.	9		
English and Classical School,	Providence, R. I.	Prof. J. C. Doldt, Gen. C. R. Dennis.	Boys.	10	13	8
Rogers High School,	Newport, R. I.		Both.	4	14	
Benedict Institute,	Columbia, S. C.		Both.	9	16	15
Penn School,	Frogmon, S. C.		Both.	8	12	
Knoxville College,	Knoxville, Tenn.		Both.		9	6
St. Mary's College,	San Antonio, Tex.	Mr. Geo. Emmerst, Mr. D. Bell.	Boys.	7	8	
Bellevue High School,	Bellevue, Va.		Boys.	6	14	
Hampton Normal and Agricultural Institute,	Hampton, Va.	Miss M. E. Coats.	Both.	3	17	14–24
Hanover Academy,	Taylorsville, Va.		Boys.	4	17	15
St. John's Academy,	Alexandria, Va.		Boys.	6	13	
State Normal School,	Castleton, Vt.	Miss Lucy Wells, Capt. A. E. Leavenworth.	Both.	2	16	15
Vermont Episcopal Institute,	Burlington, Vt.	J. H. H. Canfield.	Boys.	6	14	
Wayland Academy,	Beaver Dam, Wis.		Both.	4	15	

IN PUBLIC AND PREPARATORY SCHOOLS. — *Continued.*

Gymnasium?	Cost of Building and fitting up.	Calisthenics, Exercises with Bells, Clubs, or Wands, or on heavy apparatus.	Hours per Week.	Military Drill with or without Guns.	Hours per Week.	Anthropometric Measurements.	How Many and What System.	Instruction in Hygiene.
Yes		General and special exercise in gymnastics.	2½					Yes
Room	$500							
Yes	6,000			Guns.	4			
Yes	3,500	Heavy gymnastics.	5	Guns.	5			Yes
Yes				Guns.	4			
		Calisthenics, bells.	6					Yes
				Without.				Yes
Yes	4,000			Guns.	4			Yes
Room		Calisthenics.	1					Yes
Yes	3,400	Calisthenics, etc.	5					
								Yes
				Full drill.				Yes
Room	400	Heavy gymnastics.	3	Guns.	2			
Room	200	Calisthenics, bells.						Yes
Yes	5,000	Clubs and heavy gym.	5	Guns.	4	Yes	Fifty; Dr. Hitchcock's.	Yes
Room		Calisthenics.	3					Yes
Room	1,000	Bells, clubs.	3					Yes
Hall		Calisthenics, bells, wands.	2½	Guns.	3			Yes
Room	100							Yes
		Industrial work.						Yes
		Industrial work.						Yes
		Calisthenics.	1					Yes
								Yes
		Calisthenics.		Both.	2			Yes
Yes	1,000							
								Yes
Yes	4,000	Bells.	1	Without.				Yes
Yes	600							Yes
Yes	100			Guns.	3			Yes
		Calisthenics.	1	Guns.				Yes
Yes	1,200			Guns.	5			Yes
		Calisthenics.	2					Yes

ABSTRACT OF DISCUSSION.

Col. T. E. O. Marvin asked if it were not important to introduce physical training into the common schools as well as the higher grades and preparatory schools.

Mr. Fallows said he deemed it all-important.

MILK FROM DISEASED COWS.

BY THOMAS E. O. MARVIN, PORTSMOUTH, N. H., PRESIDENT NEW HAMPSHIRE SOCIETY FOR PREVENTION OF CRUELTY TO ANIMALS.

Milk is the only single article of natural food that is capable of maintaining the life and promoting the growth of our bodies to healthy structural and functional completeness. The perfect adaptation of milk as sustenance to the physical life of man from infancy to old age, even, has rendered it an almost indispensable and universal article of diet.

Milk, like all other foods, should be free from every taint of corruption when submitted to the digestive and assimilative processes of the animal economy.

"A corrupt tree cannot bring forth good fruit," neither can a diseased cow yield pure milk! You cannot squeeze healthful juice from a rotten orange, nor hatch live chickens from addled eggs. A fountain defiled at its source cannot send forth sweet waters.

In the wild and natural state the cow produces only enough milk to feed her young for a month or two, and then goes dry until she brings forth another offspring. The tendency of cows to revert to the "dry" or non-milk-yielding condition when her calf has been weaned from the breast is prevented only by careful treatment, designed to develop and prolong the milk-yielding process. As milk is a profitable article of commerce, dairymen often give their cows such food as will promote the production of a large quantity rather than a good quality of that commodity. In the vicinity of large towns and cities, where distillers' swill or still-slop can be procured cheaply, it is used to a considerable extent. This, if judiciously fed to the cows in small quantities, with a proper amount of hay and other food, would probably produce no deterioration in the quality of the milk; but when, as is too often the case, it is given in quantities out of all reasonable proportion to other kinds of food, it is certain to affect the health and constitution of the animals. The milk of cows fed principally upon still-slop is of a very inferior quality, and seldom yields more than one and a half per cent of butter, while the milk of healthy, well-fed cows contains from three to five per cent. Swill-milk will not coagulate in less than five hours, while good milk takes but one hour under similar conditions. The effect of such milk when taken into the stomachs of young children is very disastrous, causing a variety of distressing diseases, and, if continued, death is the invariable result.

Constitutional taints, indolent and malignant tumors, fevers, anthrax, horn-ail, scant food, thirst, exposure, the extremes of heat and cold, impure water, foul stables, fear of dogs, and ruffianly treatment in their stalls, are conditions of disease that render the milk of cows injurious, and very often positively poisonous to the human system.

The simple adulteration of pure milk yielded by healthy cows is a crime punishable in this State by heavy fines, as it ought to be, even when clean water is the only addition to the lacteal fluid. In Manchester a duly authorized and well-paid officer is appointed to detect and punish such petty frauds, while no effort whatever is made to bring the vile wretch who sells poisonous products of diseased animals to justice. The milk of cows whose secretions are rendered morbid by ill usage, improper food, infectious diseases, or putrid tumors, contains a poison as subtle as the miasma of the atmosphere of a plague-smitten city, and as difficult of detection by any chemical process.

Shall we, therefore, stand in helpless terror before the mouth of the deadly milk-can, like frightened travelers before the leveled revolvers of the Jesse James gang? or, realizing the impotency of chemical skill, shall we call common sense to our aid, and make some practical experiments for ourselves? If the inspector who applies his futile tests cannot protect us from the filth and nastiness of putrescent milk, we can employ a physician or veterinary surgeon to visit the farm and inspect the cows whence our supply of milk, butter, and cheese is derived. I have had several convincing experiences, which I will relate, as I, like Dr. Childs, did not come to this convention to bring "flowers of speech nor fragrant poesy."

The people of cities and large towns display perfect imbecility and unbounded credulity in accepting for food, as they do, everything in the semblance of meat or milk hawked about the streets by persons of whose character for honesty or decency they are entirely ignorant. Such simplicity will be imposed upon as long as it exists.

It matters little how fastidious people are, unless they exercise common sense in the selection and purchase of their food, milk and meat especially.

Several families of affluent means, but without the requisite conveniences for stabling cows, in a city of New Hampshire, engaged a certain quantity of milk each from a farmer living within three miles of town. It was stipulated that they should be served with the product of one cow, a Jersey, preferable on account of the rich quality of the milk of that breed. The milk was supplied regularly for three years, until one day a "crank," an officer of the society so often advised to mind its own business, invaded the premises of the thrifty, thriving milkman, and discovered that the choice Jersey was and had long been the victim of a purulent tumor, known as a cauliflower cancer, which, growing from the region of her left eye, rendered her a loathsome spectacle to behold. Her flanks and back were covered with exudations from the festering sore, and the sides of the tie-up where she was confined in the barn-cellar were reeking with pestilential corruption. The fetid exhalations of a charnel-house are balm and fragrance compared with the fevered stench of that underground abode of life in death — a tomb of the living dead. Several other cows were tenants of the same inferno, and endured the wretched hours of every night in the polluted atmosphere of the foul kennel where fecundity and death strove for the mastery. The reproductive forces of nature retarded, but could not effectually check, the progress of the loathsome disease. The process of gestation prolonged the life of the stricken cow, and her offspring breathed in pollution with the first breath of life. The sick cow and her wretched fellow-prisoners in the reeking den were milked daily in the stench-filled confines of their awful prison, and the milk, after absorbing the fetid exhalations of their defiled lungs and the virus of poisoned vapors of the cellar, was sold in the city, and pressed by the gentle hands of loving women to the pure lips of tender infants! Should the progeny of such diseased animals be allowed to live and perpetuate its tainted strain through a long line of posterity? Shall diseased cattle be reared to furnish milk and beef for human nourishment? Shall we employ ghouls as purveyors of food for our innocent children, and feed them with putrid milk and flesh rescued from the grave? or will we exercise the intelligence we possess, and protect them and ourselves from the avarice of men who unscrupulously supply our tables with carrion fish, flesh, fowl, and milk?

We demanded the immediate slaughter of the diseased cow whose death-tainted milk yielded its owner a considerable daily income of *filthy* lucre. The whining wretch asked if we wanted to kill him too. We answered that we did not wish to anticipate the hangman, but did intend to perform our duty. The cow was promptly killed and buried, though cremation would have been a better disposal of the festering body.

A barn in Farmington was also lately visited, where I discovered a cow suffering from fully developed cancerous tumors. The disease was of long continuance, and had made frightful progress. The odor exhaled was horrible, but other cows were confined in the dense, reeking atmosphere; and we are told by the servant that the milk of the suffering cow had been sold until he refused to milk her, as he could no longer bear the stench — his stomach revolted.

Another farm in the same county was visited, and several cows and oxen were found to be affected with cancerous tumors. The afflicted animals were promptly killed and buried. The cause of the disease in that herd was probably due to the lack of proper and sufficient food, and to the foolish practice of in-and-in breeding, to which the proprietors of the farm for several generations had adhered, to save the trifling cost of procuring an infusion of new blood.

The idiotic economy resorted to in order to save a few dollars resulted in bringing loss and shame to the originator of the miserly scheme to defraud nature.

A small farmer in the suburbs of Concord was charged with having two cows in a starving condition in his barn. A visit to the premises in February last revealed the truth of the horrible story. One cow had died the night previous to our visit and had been dressed, and was found loaded into the pung of a hawker to be sold for dog meat in the city, and for what other purpose heaven only knows. The other cow was down and too weak to rise unaided. She was put under proper treatment for recovery, but every hair of her hide fell off. She was too far gone ever to be useful, and soon had to be killed.

That the flesh of starved cattle, the milk of diseased cows, and the carcasses of sick animals of all kinds are sold and used as human food is positively known to Societies for the Prevention of Cruelty and by the State Board of Health. They are, however, doing all they can to call the attention of the public to the necessity of more thorough legislative measures for the suppression of the foul traffic in death-tainted meats, and for the better protection of domestic animals from the cruelty and neglect which produce disease and untimely death.

The cruelties inflicted upon cattle, horses, sheep, swine, and fowl by the present barbarous methods of transportation on railroads are shocking beyond belief. It is a crime that outrages humanity, a disgrace to civilization, and a commentary upon the intelligence of the American people.

I will give one of the revolting details of this iniquity; a full revelation would sicken and disgust an audience of Hottentots.

One day last summer a cattle-train halted for a few moments at the railroad station in Canaan, N. H. In one of the cars, overcrowded and mixed with large cattle and swine, some calves had fallen to the floor, hot, exhausted, and tortured by thirst. As soon as they were down, the hogs began to feast upon the quivering flesh and blood of the helpless living creatures. The awful sight so affected a little girl, who was waiting at the station with her mother, that she was seized with convulsions, and it required the utmost skill and attention of a physician for several days to restore the child to her normal condition.

The moans and piteous cries of the suffering, overcrowded, and tortured creatures, when cattle-trains stop at Concord Monday nights, every week, en route to Boston, are enough to melt the heart of a graven image, but the soulless corporations and mercenary herdsmen, who coin money out of the blood and misery of the tortured victims of their cupidity, will never be moved to pity until an indignant public rises in holy wrath and pushes them to a just and merciful reform, and the adoption and employment of modern improvements and inventions applicable to cattle-cars, whereby animals doomed to slaughter may be brought from the Western grazing grounds to our markets in the East with some regard to decency, common sense, and humanity.

Stock-cars of an approved pattern have been invented and are used only to a very limited extent, because the railroad companies and cattlemen persistently oppose any interference with their old-fashioned torture-boxes and death-traps, into which they can and do crowd animals of all ages, sizes, sex, and condition — breeding cows and tender calves — for long rides, exposed to all the vicissitudes of weather and change of climate. The large animals, frantic with hunger, thirst, and heat, or cold, gore and trample the smaller and weaker to death in their agonized attempts to escape the manifold torments of close confinement in their crowded and cramped cages, where to stand up so long is exquisite torture, and to lie down is certain death.

Hundreds of thousands of animals, fevered by close crowding, starving and perishing from thirst, trampled and gored, dead and dying, are brought from the far inland pasture lands and prairies to supply our seaboard cities with food, and to be shipped across the Atlantic to feed the toiling millions of Europe every year, with as little regard to their comfort, health, or lives in transportation, as though they were as devoid of feeling as pigs of lead, or as callous as a modern railroad magnate.

Aside from the question of humanity involved in a consideration of the abuses animals are needlessly subjected to in transportation to market, the disastrous effect upon the lives of men, women, and children, — who ignorantly eat the flesh of creatures dead from exhaustion, hunger, and disease, in consequence of their sufferings on ill-contrived stock-cars, — should awaken our legislators to the necessity of giving our state boards of health full power and authority to compel the railroads and cattlemen to adopt better styles of cars and a more merciful regard to the comfort and lives of their dumb, friendless passengers than has ever yet been granted them in their gruesome journeys to meet an inexorable doom.

The time has fully come when a proper regard for the protection and security of human life requires an intelligent regard for the lives of the dumb creatures that die that we may be fed.

Sanitary regulations must be devised and rigidly enforced to protect the people from the avaricious spirit of cattle kings, railroad magnates, and hucksters, which does not scruple to defile the food we eat that they may more easily and certainly coin money out of the misery of friendless animals and credulous men.

ABSTRACT OF DISCUSSION.

Dr. S. W. Abbott, Secretary Massachusetts State Board of Health, said that as there was no article of food in more common use by the people, especially by children, it was one of the most important subjects that could be brought up for consideration. The laws of this country are not sufficiently strong and definite to control the matter of using milk from diseased animals. In Massachusetts there are laws, but they are not definite enough. The law says that milk shall not be sold that contains less than thirteen per cent of solids; but he considered the matter of using milk from diseased cows to be of far more importance. The British law provides that officials of that country may go into dairies and take action as to the food of animals, as to their care and the ventilation of the cow-stables. Good ventilation and sufficient air-space are just as essential for the welfare of cows as for persons. He cited a case in a town about five miles from Boston where thirty-five cows were crowded into a cow-shed having 200 cubic feet of air-space per cow, while a cow should have at least 1,000 cubic feet of air-space. These cows were of the poorest sort. They had been bought as condemned animals, and many were diseased. About a mile distant from this cow-shed was a tomato-canning factory, and the skins and rotten tomatoes were fed to these cows. They also had a little salt hay and some brewers' grains. Cows should have a clean water supply, but too often we find the well down in the barn-cellar. In this case there was no cellar, but the manure was heaped up in piles on each side and the filth had run under the building. Through this filth a pipe was driven to secure a water supply. He had some of the water analyzed, and found it to be terribly polluted. This was the sort of milk that was going into Boston every day for the supply of infants. This milk averaged more than thirteen per cent of solids. He said laws were needed that would control the sale of milk from diseased cows, the character of their feed, and the places in which they are kept.

In some sections cows are fed largely on brewers' grain and sprouts. Brewers' sprouts are largely made up of sugar, and, if fed dry, are not unhealthful.

Dr. William Childs, of New Hampton, said this subject of milk in diseased animals and the absorption of disease has not received sufficient attention. He believed that he had observed that very many cases of what are called summer complaint in the country among children have been cured by simply changing the pasturage of the cows from which they obtained their milk supply. Young children that are obliged to live upon the milk of cows are very liable to have diarrhœa and to become debilitated. He had in mind several cases that he was confident were cured by removing the cows from low land where the feed had become dry during the middle of the summer and where they were obliged to drink water that was filthy from decomposing matter. A wonderful improvement could be made by being watchful of the food source of little children.

S. W. Clarke inquired to what extent brewers' grain was used and what was the effect of feeding ensilage.

Colonel Marvin answered that the use of brewers' grain was limited to its production. The farmers use all they can obtain. The brewers of Portsmouth sell all their refuse to farmers to be used as feed for their animals; it was also fed to swine. Where it is fed in small quantities he believed it would do no harm, but if exclusively used would produce nothing but harm. Ensilage is another mode of feeding cows which needs to be more thoroughly demonstrated. If the feed ferments and is in a state of putrefaction, of course it is unfit for the sustenance of creatures or for the production of milk, but under proper management he believed that ensilage could be made a healthful and economical feed for cattle. He spoke simply from his personal observation, and not as a scientist. Referring to the subject of diseased animals, he said that under the existing circumstances it was no wonder the infant mortality was so large. If children were properly fed, clothed, and warmed, there was very little danger from sickness, and no reason at all for death between the ages of one and five years if properly cared for.

Mr. Clarke inquired why tomatoes were fed to animals if there was no nutriment in them.

Dr. Abbott replied that feed was often given to cattle more to make up bulk than for the real nutriment that it contains. Tomatoes contain a very minute amount of sugar, but are of no use whatever as a feed for cattle; but did not believe they were injurious. As a food for persons he considered them very healthful.

Prof. E. R. Angell, of Derry, said it seemed to him that there was a mistaken opinion as to the value of ensilage. He did not believe in feeding that or any other decaying matter to animals calculated to eat fresh food. It was not yet known whether disease germs were produced in silos or not; and until it was demonstrated he preferred to be on the safe side. He would prefer to use milk from animals fed on dry stalks than from those fed on ensilage, and he thought the farmer would find it more economical in the end to dry his grain instead of preserving it in the silo.

Mr. Marvin asked if steaming the dry stalks would not render them as easily digested as the product of the silo.

Mr. Angell replied that he could not say from experience, but it seemed to him that in the process of digestion enough water would be mixed with it to make it equivalent to green food. When the stalks are put in the silo, part of the sugar is lost.

REMARKS UPON THE RELATION OF THE PULPIT TO SANITARY REFORM.

BY REV. C. B. CRANE, D. D., CONCORD, N. H.

There is one word among others that I find in the dictionary which always presents to me a formidable appearance, and the word is "temerity"; and it is all the more formidable to a man when he realizes that he is himself making an exhibition of temerity. I have been looking over the programme and I find that almost all of the speakers are men of the medical profession or of a profession germane to that, and I stand among you the solitary preacher. If you should do me the honor to come into my church next Sunday, you would be the laymen and I the clergyman; in your presence to-day I am the layman.

Upon one occasion Mark Twain was asked to introduce Mr. Howells to an audience. He said: "I have been asked to introduce Mr. Howells to you; but I cannot see why I should introduce him to you, because you know as much about him as I do. You know he has written some stories, and that he is the editor of the 'Atlantic Monthly,' and that is all I know, and my only function on this occasion is to back up his moral character." (Laughter.) And my only function on this occasion is to back up the doctors in the work of sanitary reform. Besides, it may afford you some comfort to know that we preachers are not indifferent to this matter of sanitary reform. I evidence by my presence that preachers, as a class, appreciate the importance of sanitary reform and aid it by their influence. My topic is "The Relation of the Pulpit to Sanitary Reform," and I am anxious at the outset that you should not misapprehend my position. Sometimes in large churches and cathedrals you will find that the pulpit is set on rollers so that it may be moved from one point to another for the convenience of the speaker. I would not slide the pulpit to one side in order that I might speak on the question of sanitary reform, and then slide it back again. The pulpit has legitimate jurisdiction here. I do not believe that religion is an adjunct to life. Some one has said that conduct is seven eighths of life. Conduct is eight eighths of life, and all that goes to make up conduct is within the jurisdiction of what I call religion. I believe that religion has as much to do with the milking of cows as with the preaching of sermons. I say religion covers all life, and if this work of sanitary reform belongs to life it belongs to religion. Body and soul interact, consequently, if sanitary reform is a work in the interests of the health and life of the human body, and if the work is well and wisely performed, you doctors are doing something in the interests of the soul and the spirit; and if I am working for the soul and the spirit I am doing something in the interests of the body. The body is the temple of the Holy Ghost, and we cannot afford that the temple which the Holy Ghost is to inhabit shall be a temple polluted with disease; and therefore I say that the pulpit has legitimate relations to this question of sanitary reform.

The men and women who compose the church are the capital or stock in trade of the minister, they pay their pew-rent and put their hands into their pockets and carry out his plans, and by their munificence the word of God has opportunity of proclamation; so that when such men or women fall out by the way, become victims to some disease which would not have come upon them except they disobeyed the laws which secure good health, do you say he should be regardless of it? My men and women are my capital, and I should do all I can to keep them healthy, that they may do good work for the Master.

I believe that every minister should superintend the sanitary appliances of his church; if he is not competent to do this, he would better get down and out, and let some other man take his place. In the construction of meeting-houses he should see that provision is made for good ventilation, even if it be at the expense of stained glass and frescoing. He should instruct the sexton to ventilate the church thoroughly between the services. People delude themselves with the idea that because audience rooms are large there is no need of ventilation. You can hardly shoot an arrow to the top of the room, and they imagine that the bad emanations rise into the upper air, so that no one will be troubled thereby. The fact is, if you have a still air in an unventilated room, no matter how high that room is, the foul gases settle into the lower strata. The birds as they fly in the air can see the fishes in the water, and I can stand in the pulpit of a great church whose architect did not know enough to provide for ventilation, and whose sexton does not know enough to open windows and doors, and see the hapless men and women sit there up to their chins, up to the top of their heads, in the foul air which has been there all the year.

A minister in one of our New Hampshire churches suggested not long ago to the director of music that he would like such a selection on such an occasion. The director replied, "You take care of your end of the church, and I will take care of mine." If I had been the minister, either that director would have stepped out or I would have stepped out. Husband and wife are one, but I want to be that one. I remember when I was in Hartford a gentleman asked me to officiate at his wedding. He said to me, "Don't make it too long." I replied, "I will marry you so quick you will not know it is done; I will tie a double bow-knot and put both ends through." "But," said he, "will you give me both ends?" And I demand the privilege of having something to do with both ends of the church management. In the building of new churches there is an opportunity for the clergyman to take practical steps toward sanitary reform. He can take the architect by the shoulder and tell him if there is to be any retrenchment it must be at the expense of stained glass, but not at the expense of ventilation and pure air. I think the minister who has anything to do with the providing of the place in which the people are to be gathered for the worship of God should put his foot down firmly in the interests of sanitary reform.

The preacher gathers inspiration from a large congregation, but after a little the respiration and the perspiration of a great crowd in an unventilated church swamp the inspiration. A minister cannot speak well in an unventilated church, and the hearers cannot hear well. Some one has said that it takes two men to make a sermon, the man in the pulpit and the man in the pew; but I tell you in an unventilated church all the men in all the pews could not help to make a sermon fit to be heard by a congregation of born idiots.

The people come to their minister for all sorts of advice, and they come with freedom because they know they will get it for nothing; and I think ministers in city and country churches have a great opportunity for work in this matter of sanitary reform. I once discovered a young couple in my congregation who were sick and broken out with humors, and death had been in the family. By and by I discovered that the cellar of that house was never dry; it was always damp and mouldy, and I knew it was a place of death to them. I see people coming to church looking sick and pale, and I know something is wrong; and I ought to say to them, "You should look to your water supply, and see that there are no nuisances about your premises." A doctor has to be very careful how he goes about and offers his advice to these people, because they would say he was trying to get a job; but the minister can say these things, because they know he is not looking for a job.

New Hampshire is the great sanitarium for a large part of the continent of North America. A majority of the city people who go away for a little trip in the summer do not go to the great and expensive hotels, but find accommodations among the farmers and at the homes of our country people; and I think there is an opportunity for ministers, who know how little knowledge there is on sanitary matters, particularly among the farmers, to tell their people that they should be extremely cautious about inviting summer visitors until they are certain of the proper sanitary condition of their homes. Two of our best Concord young men spent their vacation together at one of the beaches last summer. Upon their return home both were taken down with typhoid fever; one died, and the other barely escaped with his life. The occasion of the fever is more than guessed. I know a house, a farmer's house, in the State of New Hampshire, among the foot-hills of the White Mountains, which has opened its doors for many years past for summer boarders. There have been from twenty to twenty-five persons in the house at one time. All the buildings are connected, from the house to the barn. Here is an area twenty feet square and closed on three sides with buildings, the fourth side being open. On the east side, and almost at the center of a line drawn from the adjoining sides, is the well from which the water for drinking and culinary purposes is taken. Pass along to the north side, and here are two water-closets frequented by the twenty-five boarders, not to speak of the members of the family. Turn a corner to the west side, and you have your pig-sty; next that is the stable; and on the open side, and but a little way beyond the southern line inclosing this square of twenty feet, you have a depressed barnyard, like the slough of despond which Bunyan brings before us in his immortal allegory. What do you think of that for a health resort? The boarders do not go to that house any more. The well is where it was; the water-closets are where they were; the pig-sty and stable are where they were; the stygian vale of the barnyard is where it was; and all the members of the family have ill health. It seems to me the medical societies and you gentlemen who are interested in this work of sanitary reform ought to do a very important and a very urgent work for these hill farms, where there is an annual influx of people from the cities who spend their summers with you; and you should see to it that there is nothing to alarm and drive them away.

I am going to tell you a story about a city in New Hampshire. I have traveled widely over this continent; have traveled quite widely in the Old World, and have visited many cities of renown; but I have no hesitancy in saying that this New Hampshire city of which I am speaking now is one of the most beautiful of them all. It has an intelligent, refined population; but they favor "dumps," even in the heart of the city. I will describe one of them. It is located in one of the most beautiful and populous parts of the city, and is in a sort of irregular square, on all sides of which are residences. Into that dump go not merely ashes, but dead dogs and dead cats, and decaying onions and fish, and every other vile thing you can imagine. The city fathers know about it, but no decisive action is taken against it. When it is filled up, that area is to be sold out for building lots, and men are going to build their house there. If I lived in that city (I am not going to tell whether I do or not, but Dr. Watson knows where it is) I would complain of that dump; and if I do live in that city I have complained of it twice already. (Laughter.) My first pastorate was in the city of Hartford, one of the most beautiful cities you can find on this planet; and the Rev. Dr. Horace Bushnell, — who has added more original matter to theology during the past fifty years than any other one man, a public-spirited citizen withal, — took much interest in the question of a water supply. He told the people what they ought to do, but they rejected his advice, — and have been sorry for it ever since. Ministers are good citizens, and sometimes give good advice.

There is a prospect that much of New Hampshire's material prosperity is to be derived from the annual influx of summer visitors, and you should look to it that no pestilence arises from the soil to drive them away. Thus much do I, a minister, say to the good people of New Hampshire, in their own interests, on the subject of sanitary reform. Let all the doctors cry, Amen.

Samuel D. Lord, Esq., introduced the following resolutions:

Resolved, That we, citizens of Manchester, and listeners to the interesting and instructive proceedings of this convention, desire to express hereby our thanks to the State Board of Health, and especially to Dr. Watson, the secretary of the Board, for holding their first sanitary convention in our city, confidently believing that it will give a needed impulse to the work of sanitation in our community.

Resolved, That we also acknowledge our obligation to the learned and able gentlemen who have addressed us and read to the convention their several interesting and instructive papers.

The resolutions were seconded by Dr. E. B. Aldrich, and unanimously passed.

The convention was then formally adjourned.

THE PREVENTABLE CAUSES OF DISEASE, INJURY, AND DEATH IN AMERICAN MANUFACTORIES AND WORKSHOPS, AND THE BEST MEANS AND APPLIANCES FOR PREVENTING AND AVOIDING THEM.*

BY GEORGE H. IRELAND, SPRINGFIELD, MASS.

We are aware that the home life of the average American mechanic is not what it should be. In considering our subject we must assume that he comes from a clean house, well ventilated; that he has a pure water supply; that he brings a well-nourished body; that his clothes are clean and duly cared for, — in fact, his wife's work "should praise her in the gates."

The location of the factory is an important subject for the workman. In the city he is exposed to lung disease from a smoky atmosphere and impure air, bad eyes from poor light during the day-time, great danger from fire, owing to the buildings being huddled together, and also from the combustible nature of the surroundings. The suburban factory presents disease in the shape of malaria and pulmonary troubles, owing to the fog that rises from the undrained land, and from fevers from the bad or no sewer connection.

Unfortunately, the builders of factories have not that latitude of choice open to builders of private residences. The manufacturer has many limitations, such as water-power, and proximity to railroads and other factories. Some, of strict necessity, must be carried on in the midst of thickly settled cities. Manufacturers are, however, each year loosening the fetters that seemingly have bound them, and are exercising more thoughtful care in the selection of building sites. They find it profitable to their pockets as well as contributory to the health of their operatives, to erect their buildings in moderate-sized towns, or in the suburbs, rather than in the heart of the great cities themselves.

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* This essay won a prize of two hundred dollars offered by Mr. Henry Lamb, of Rochester, N. Y., through the American Public Health Association. Published by permission. Copy righted.

The building should be placed upon well-drained land, and every precaution should be taken against any possible trouble from surface or overflow water. These remarks also apply to the adjoining lands, as land that fluctuates from overflow to dry soil is a frequent cause of malaria.

The building should be of brick, and, if possible, only two stories high. (A woolen manufacturer, who had the experience of several fires in his factory, remarked in our presence that were he to rebuild he would only build two stories high; as then, in case of fire, the hands would feel certain of their safety and make a stubborn fight to subdue the flames.) The floor timbers should rest on ledges built in the walls. The flooring should fit closely, affording no hiding-places for rats. Where noisy occupations are to be carried on, the floors are to be "deafened." Each story is to be high enough to permit of good ventilation without the draft striking on the heads of the workmen; the roof to be of metal or slate; stone coping to be used on chimneys and all walls extending above the roof: this prevents loose bricks from falling. The cornices should be of sheet metal, when stone, brick, or terra-cotta is not used; columns to be of hard wood or brick, as they will not warp if badly heated; chimneys to rest upon their own foundations, starting from the ground; the walls to be whitewashed directly upon the bricks. If plastering is required, use metallic lathing. The stairs, of easy pitch, are located at each end of the building. In long buildings other flights are to be added, so that no person will be obliged to go over eighty feet to reach a stairway; the stairs to be of iron, excepting the treads and risers, which may be of wood. Where women are not employed, omit the risers; each flight to reach the story above by a direct flight, no turns to be permitted; the top of each flight to be cased in, and a door provided which is to be closed each night, and after the exit of the operatives in case of fire. This door is to be of plank completely covered with tin, the joints of which are turned over. The hinges to the door are to be fastened by bolts passing clear through the door. This style of door is the proper one for inside purposes where one section of the building is divided from the others. This door will stand where the ordinary iron door would be curled up and drawn out of position by the heat. A scuttle fastened only by a hasp is to be placed in the roof over each stairway. This scuttle is reached by a flight of steps always in position. Elevators and elevator shafts are the causes of many accidents. At the best they are dangerous things, and need to be carefully guarded. The shaft forms a direct means of communication for the flames from the basement upwards; it is ever ready for the reception of any thoughtless person. The moving cage or platform crushes and maims, and the parted rope sends its precious load to the bottom of the elevator well, a mangled mass of humanity. The elevator should have safety self-locking attachments (to operate in case of a broken suspension rope), self-closing hatchways, and guards at each landing. One person should be designated to run each elevator, and he should be held strictly responsible for its proper use. Thus detailing one person for this duty is entirely practicable, even when the elevator work is not enough to occupy his time. By a system of gong signals he can be called from his other work to run the elevator when required. A good-sized gong-bell is located in the elevator well, and strokes call as follows: One, basement; two, second floor; three, third floor; four, fourth floor; a clanging of several strokes, an emergency call. We have seen this plan most satisfactorily carried out for several years. If self-closing hatchways are not adopted, a sign marked DANGER should be suspended by cords or chains about five feet from the bottom of the elevator; this gives timely warning to those below of the descent of the elevator. Where there are projecting cross-timbers in the elevator well, their corners should be rounded, in order that nothing may be caught under them. All elevators should be provided with automatic shifting devices, to operate in case the carriage, from any cause, is left running. Ropes and chain falls should have a shifting lever attached to the beam, to be operated by a projection just above the hook. This runs the driving-belt upon a loose pulley in case the winding-drum is permitted to go too far. Proprietors should insist that all elevator operators, and all who ride upon *freight* elevators, maintain the standing posture, as then they are in position to use all their faculties in case of accident. It should, if possible, be a rule, upon all freight elevators, that only the operator ride. Many accidents are the direct result of "fooling" upon the slow freight elevators, where all are allowed to ride. In a factory with which we are acquainted they have a very slow freight elevator, taking some two minutes to cover five stories. One warm day, the operator, having to go empty from the basement to the top store-room, lay down upon the elevator platform. His head by some means came in contact with a timber: he would have been killed had not his cries quickly attracted the attention of one of the foremen, who stopped the elevator. As it was, his scalp hung over his face, being held only by a hinge at the forehead. Had he been standing upright the accident could not have happened.

The annual loss of life in attempting to escape from burning factories is appalling, and the subject of fire-escapes demands the most serious consideration. Fire-escapes are of many forms. The best ones for general use, and the only kind that can be relied upon where women are employed, is the zigzag iron stair system of ladders with *flat* treads, the whole to be of iron firmly secured to the outside of the building, and extending to the roof. Women are extremely sensitive about making any seeming exposure of their limbs; this fact, coupled with the confusion incident to fires, has, in the opinion of experienced persons, rendered the ordinary perpendicular ladder next to useless. With the flat treads the ladders are converted practically into steps; the inclination is easy, and an uninjured woman or child may descend in perfect safety and without fear. This style of fire-escape enables a sound person to assist or bring down an injured or unconscious one.

In locating the ladders, select a side of the building that may be safely covered by the hosemen standing on the ground. Do not bring the ladders near the windows of rooms containing extra inflammable material, as by so doing the exit may be cut off in case of fire. For high factories, where men alone are employed, a good supplementary escape is one of the endless chain pattern, the rate of descent being graduated and controlled by an escapement or friction governor. These escapes permit a continuous line of persons to escape, as several may be upon the descending chain at a time. This style of fire-escape presupposes a strong pair of uninjured arms and hands, and full possession of the mental faculties. Another pattern of escape is where a belt encircles the body, and has a frictional device through which the rope plays, one end of which is attached to the window-frame. We have seen a man descend one hundred feet by this means. This style of escape can have only a partial approval.

The simplest of all escapes is a rope long enough to reach the ground, and attached to the inside of each window-sill, — the rope, in loose coils, hanging upon a hook or pin, ready to be thrown out in case of danger. This simple rope escape is good for many purposes, but cannot be regarded as a safe escape, as an injured person could not descend.

Where there is danger from sudden explosions or fire, and the building is not over three stories high, the "sliding-poles," such as are common in the fire department houses, may be used. They afford a quick means of reaching the ground with comparative safety. Connected with the factory office there should be a system of electric bells and speaking-tubes. In our factory they enter the telephone room at the office. At first we had several tubes, but we have found one general tube to be more satisfactory. At the office end, clustered around the mouth of the speaking-tube, are the push-buttons for the electric bells calling the foremen. The foremen in town have a button calling the main office, also one for each of the other foremen. By stepping to the tube and operating the buttons, one can speak with any or all of the foremen. The advantages of this system, in case of fire or other emergency, are apparent without further comment.

The escaping gas and odors from the water-closets are a fruitful cause of disease. The water-closets should have a good "wash," and be trapped under the seat; and another trap should be added to the pipe as it nears the sewer. The closets of ordinary construction for the women should open from a commodious room, which is to be used as a dressing-room. The closet for the men should be provided with a lifting sub-cover, thus adapting it either for a water-closet or urinal. This suggestion may be objected to by some, but observation has convinced us that the combined affair is less offensive than the separate system. For if the pans have the ventilating tubes connecting with the ventilating shafts, as is now common in all good plumbing, the constant wash of the pan will prevent all objectionable odors. The seats, pans, and pipes are to rest upon iron supports. The seats are to be of hard wood, well filled; no wood-work at the front. The floor should slope gently toward the front, and be covered with zinc nailed off, with round-headed zinc nails, into squares of two or three inches on a side. This arrangement permits the free use of the mop in cleaning, and suggests a clean place with but little trouble. Many prefer the automatic operating valves, but we prefer the common method of handle and chain, as then any required amount of water may be used. If urinals are used, keep a piece of carbolic soap in each, and flush them often. All sinks and wash-bowls should be trapped. Have all the pipes in sight and accessible. Where chemicals are poured down sinks use cesspool covers. These are circular pieces of wood covered on the under side with lead and rubber, and having an earthen knob on top. Ventilation should be such that a change of air is effected without drafts upon the head of any person. This may be accomplished by placing the top openings, whether into air-shafts or to the outside, well up, and by keeping the inlet openings well down. Some years ago the writer served as a junior member upon a hall committee to overlook the construction of a hall devoted to social meetings. We had all suffered in the old hall from bad air and drafts of air, although the building was supposed to have an elaborate ventilating system. In our new hall we brought the hot-air register to the center of the hall. In the wall of the building was placed a register connecting with an air-chute, which also opened about the center of the hall. Half round windows, opening downward, were placed near the ceiling. By manipulating the openings according to circumstances, a comfortable, well-ventilated hall was secured at any season of the year. A bald-headed person could sit under any of the open windows of this hall and not take cold. We believe that the drafts from the ordinary windows cause much sickness, and that the time will come when our advanced builders will imitate the best car builders, and have most of the windows tight, depending upon special appliances for ventilation. In all cases see that the new air is *pure air*. Drafts of air cause much trouble in every factory of which we have intimate knowledge. Many of these cases may be easily overcome. Probably persons do not differ as widely upon other physical conditions as upon exposure to currents of air. One man may work unaffected in a strong draft, to which his seemingly more robust shopmate would take exceptions. In those portions of the country where lung troubles and catarrh are common, great care is required. The sensitive workman should be permitted, so far as possible, to select his location. Paper caps having two ventilating holes are useful in many cases.

An important contributor to health is the sunlight. The difference between a well and ill lighted factory may be practically illustrated in every large city where houses, that once were healthy homes, are now sickly ones, the cause being directly traced to the shutting off of the sun's light by high buildings being erected near them. For fine work, where the eyes are constantly used, a north light is best, the workman sitting so he receives the light directly in front or at the left hand. This will not shade the work while using the right hand. An opposite wall is improved by giving it a coat of whitewash; this also gives a good background against which to sight work while testing it. An awning to each window, although expensive, is the best summer protection we have seen. The portions of a building most often neglected as to light are the hallways and stairways, and this neglect has produced many accidents.

"Double windows" are a protection in winter for exposed locations. When used, one light should be hinged for ventilating purposes.

We think the subject of lightning-rods requires no further consideration than that they be good ones, and put up in accordance with well-known laws of safety. Do not place iron articles against them, as they may lead the lightning in a dangerous direction. The electricity reaching the ground during a thunder storm is greater than many suppose, as the rain-water conductors carry down considerable. A friend of ours received a severe shock while adjusting a disarranged spout. If the roof has any considerable pitch it should be provided with fenders to break up and hold the snow and ice, thus preventing the too often disastrous slides. Special pains should also be taken as to the steps. See that the drip from the roof or porch does not fall upon them and, freezing, make an icy covering. The steps, if of metal or stone, should, in a northern latitude, have a wooden covering in winter. Use sand upon the sidewalks and steps during an icy time. The weight of the snow itself is often dangerous, even in the case of well-constructed buildings, but it becomes more dangerous, owing to its increased weight, when saturated with water after a heavy rain-fall. In clearing the snow from the roof, see that the space where it is thrown is properly roped off and guarded.

From our own experience we are fully impressed as to danger from fire; and while we have alluded to the subject in other portions of this article, there are several matters that require detailed consideration.

The heating of the building is best done by means of steam-pipes surrounding the rooms. The pipes should be supported by iron brackets; and in no case are the pipes to come near wood-work as fires have originated from this cause, the assertions of some ill-informed persons to the contrary notwithstanding. Where stoves are used they should stand in iron base-pieces, the edges of which are turned upward some two or three inches: this prevents sparks and loose particles of coal from falling on the floor. See that the stove-pipes are securely fastened by wires to the ceiling and chimney; that the pipe enters the brick-work flush with the flue; and if the pipe is carried through a partition, see that the thimble keeps the pipe well away from the wood-work. Keep the tops of stove and steam pipe clear of sawdust and dirt, and pile nothing that will drip or fall against them. In burning sweepings containing sawdust, do not crowd the fire too much with the door closed, as cases are known where the flames have, with an explosion, burst from the door when opened to put in a fresh supply. One person should, in each room, be directly responsible for the care of steam-pipes or stoves, and the ventilation. The temperature that will probably be the most acceptable to the majority of persons is from 68° to 72°. The lights in each room should be under the care of one person: this prevents a general use of matches. Gas-lighting should be done with the electric hand-torch, unless all the burners are connected with a system of electric wires igniting all at once. The gas should be shut off during the day, and after the building is vacated for the night, to prevent the leakage, that is always greater or less where the piping is extensive. In case of a fire happening when the gas is lighted, shut it off as soon as the building is cleared: this will shut off some fuel from the flames. The office supply may be drawn from a separate meter, or that supply-pipe may tap the main pipe between the shut-off and the meter. Some special provision should be made for the office, as that department requires gas at times when the factory is not running. Secure gas and kerosene fixtures from swinging against the wall or under shelves. Steady all pendent fixtures by means of wires. Place protectors over all lights that come near anything overhead. The writer has attended at least one fire caused by sparks adhering to the soot upon the bottom of a glue-pot; hence the necessity of seeing that the fire is all out where the old-fashioned glue-pots are still in use. We advocate the use of steam glue-pots, not only for safety, but for their other advantages. Oiled rags, saturated cotton waste, and all combustible waste material should be collected at the close of each day and deposited under the boilers. We know of one large furniture manufactory where several fires had occurred from the rags saturated with filling, which was of an exceedingly combustible nature. The proprietors, for their own safety, made a change for a less dangerous composition, but at an annual loss of $2,500. In our own experience we have seen a smoking fire from rags that had been saturated with filling only ninety minutes.

Ashes and all waste combustible material not at once put under the boilers should be deposited in riveted or seamed metallic receptacles, having metallic covers, and the whole placed out-doors at a distance from the buildings. The fires resulting from smoking have been so numerous in the past, that now most well-regulated factories have notices posted, prohibiting smoking upon the premises. One of the most noted manufacturing establishments in the country, in order to avoid all possibility of danger, prohibits a pipe or a cigar being brought into the factory. The old-fashioned sawdust spittoon has yielded its full quota of fires, but fortunately they have been slumbering ones, breaking out in the dead of night or on Sundays and holidays; so the loss of life to be attributed to them is small. All spittoons should be of earthen or of metal. If an absorbent is required, use dry earth or ashes, as then, if a match, cigar-stub, or other combustible article is thrown in, no danger follows.

A special fire-proof building, at a distance from other buildings, should be devoted to oils, turpentine, varnish, and kindred combustible stock, only a day's supply being removed at a time. When the boiler-room is left, even though temporarily, see that the openings under the boiler are closed. We had a fire in our factory, the result of a fifteen minutes' absence of the foreman, who left his under-door open, also the one into the fuel room. A brisk spring breeze blew out a line of shavings that formed a pathway for the fire to a bin of very combustible material, and it was only after a stubborn fight that the building was saved. In establishments requiring the use of lenses, see that these articles are not left where they will focus. The writer once had a stereoscopic view destroyed, the instrument holding it being left in a window. Matches should be kept in iron self-closing holders, the stock to be kept in covered tin or earthen vessels. Keep the yards and surroundings free from straw, old cases, and all rubbish. One of the worst fires we ever saw was a second fire catching in some straw by a spark from the original fire, a distance away. Keep the yard well wet down in dry times. If there is a shaving-chute, see that it is tight, and does not drop any dust or shavings till the shaving-bin is reached. This chute is to have a shut-off, which is to be promptly closed upon a fire alarm being given.

A volume might easily be written upon the dangers from naphtha and benzine. Although the temptation is strong to use them, they should be banished from the factory. Where printing-presses are used, substitute turpentine for cleaning off the rolls. Some of the carburetors in the market are very dangerous, from the fact that they use the dangerous products of petroleum, which, leaking through the service-pipes, cause explosions if a fire or light is present. Keep telegraph and telephone poles away from the buildings, as the wires cause the loss of precious minutes to the firemen in raising the ladders.

The system of sprinklers introduced within the past few years affords great protection. Perhaps the best evidence we can produce in their support is the favorable opinion of the underwriters. Briefly, this system consists of pipes extending over the ceilings to the rooms, hallways, and stairways. These pipes are provided with a sprinkler about every eight feet. Each of these sprinklers is stopped by a cap held in position by fusible solder, melting for ordinary cases at 150° for engine-rooms, or dry houses at 200°. The water pressure being constant, a wetting down is assured in case of fire. In our factory we have had two occasions to test them. Each time they went off by the heated air or smoke, the live flame not reaching to them. Their work was regarded as most satisfactory. One pattern of the hand-grenade is in our house and in the factory. While these articles, perhaps, add another means of security, too much dependence should not be placed upon them.

The public tests of all this class of extinguishers seem satisfactory, but, from age or other causes, they seem to lose their power. Five of our quart size were thrown at a neighboring fire without checking it. We then ran out our private line of hose and stopped it. The automatic electric fire alarm sounds a bell when the heat reaches a certain point: this makes it an efficient monitor in case of fire. It is of especial value for store-rooms and parts of the building not constantly occupied.

Electric light lines should be well guarded, as fires have resulted from their disarrangement. The wires, unless properly protected, are dangerous to touch when the electric current is on. Accidents have resulted from the wires being touched.

When the fire is the result of a defective electric light apparatus, use great caution in applying the water, otherwise the person throwing it may be knocked over. Throw the water from the pail so it will leave in a mass. If it forms a continuous stream, a current is established. We can mention one fire from this cause, where two men, in trying to put it out, were repeatedly knocked over, until the cause suggested itself, when they threw the water in masses without further trouble till the current at the central supply was shut off.

The following constitute the fire apparatus outside the building: A hydrant with hose attached: the hose is coiled up and safely "housed" from the weather in a closet erected against the wall. The wrench for turning on the water is also hung up in the closet. The door is simply buttoned: then any one may use the apparatus in an emergency. Against the wall, under a protection from the weather, hang a strong ladder, with spikes at the bottom end, a scaling-ladder having hooks at its upper end, and a fire-hook. This hook of iron, with a chain attached, is mounted upon a long, stout pole. A rope is attached to the chain. The inside portable fire apparatus, distributed at accessible points, consists of tubs and pails of water, fire-axes, ropes with hooks attached for drawing up hose, and hand fire-grenades (if they can be made to hold their vitality). Have at the foot of each flight of stairs a fire-ax, a lantern filled with sperm or lard oil, and one or more pails of water. The water in the tubs and pails, if in a freezing temperature, is to be saturated with salt. Each workman should have his appointed place for fire duty. All the hose and hydrant couplings should have couplings corresponding with those of the local fire department.

Dust may be classed under two heads: First, that ordinarily recognized as dust, being a miscellaneous collection of fine particles, containing more or less decaying matter; and secondly, the finely disintegrated portions of material thrown off in the mechanical process of manufacturing. The first is easily managed, so an ordinary regard for neatness renders a detailed consideration unnecessary. The steam-pipes are apt too often to be neglected, the very fine dust accumulating being thrown off and mixed with the atmosphere when the steam is suddenly let on. The rooms should be swept after the day's work is done, using moist sawdust for a sprinkling. This keeps the dust down and the floor will soon dry. Mechanical dust is more difficult to manage. The ordinary wood sawdust is now, in the best regulated factories, conveyed by suction, produced by a fan wheel, to a bin, or room adjacent to the boiler-room, where it is burned under the boilers, with other refuse. These ducts, while serving an admirable purpose, are also dangerous in case of fire, furnishing a direct communication to the most inflammable portions of the factory, the shut-offs being the only safety. Dust from sanding and polishing machines, which are revolving disks, drums, or reciprocating surfaces covered with sand-paper, may be also drawn by the air blast into a bin or receptacle by itself. Black walnut sawdust is particularly offensive to persons of catarrhal tendencies, and needs to be carefully looked after. In case of metals, the dust may be removed from in front of the workman by suction or a blast of air. Persons who have been troubled from metal dust have been enabled to continue their work by growing a moustache, which caught the particles before they could reach the nostrils. In large cities and towns, where the water supply is drawn from a common source, the water usually is good, but in isolated factories where recourse is had to wells, great caution is needed to avoid pollution from drains, manufacturing waste, etc. The ice supply is hardly at all recognized as a source of danger, yet it is important that the ice used come from a clear body of water, and, if not in motion, large enough to furnish clear blocks of ice free from dirt. Do not use ice cut from small ponds, or the inlets of large ones, as these places are usually the dumping-places of dead animals and other objectionable refuse. The most satisfactory method of cooling water we have seen, is where the water flows through block-tin pipes encircling the ice-chamber. This gives water cold enough for ordinary purposes. Where the work is exhaustive, or the weather excessively hot, we recommend that broken ice be placed in a non-conducting receptacle. A piece of ice the size of a walnut held in the month will be refreshing. Before using water or ice, rinse the mouth thoroughly. Evidently many of the so-called prostrations by heat should be attributed to the immoderate use of ice-water. In most manufacturing establishments there is a considerable amount of "handling" the goods in the process of manufacturing, transporting it from one part of the factory to another. This work is usually done by cheap and unskilled hands, and many accidents result from the lack of skill and proper appliances for doing the work. Where the rooms are on the same level, and the pieces are large and heavy, a track should be laid, the rails of which are even with the floor. Upon this track the platform car is pushed. A differential pulley block and chain raises and lowers the articles, holding them at any point. For general factory use we have found the platform trucks to give satisfaction. These trucks are made of a length to be taken upon the freight elevator. They can then be taken up-stairs, down-stairs, run over the connecting bridge between buildings, through doorways, and, in fact, in any portion of the establishment where it is desired to carry goods. This truck is a wooden platform mounted on an iron axle and wheels, with a trail-wheel at each end. It has stakes which are removable. The tops of the wheels are below the surface of the platform. Some accidents result from handling cased goods, because the workmen cannot get hold of them. It is difficult to hold a heavy case with the hook found in the hardware stores, but with a specially constructed hook our shipper claims he can hold as much as two men with the common hooks. Ours has a good point. The back curve is like the ordinary hook. The forward curve does not extend too far out, but enough to give a good leverage on the case or box. The handle or shank portion slightly recedes, and is flattened out so as to fit nicely between the fingers. The length is about double that of ordinary hooks. It is hard work for even a clumsy man to receive a "pinch" while using this hook.

Do not start the engine during the noon hour, or at other times when not expected, without giving due notice, as otherwise there is danger of somebody's being injured if he is cleaning or overhauling the machinery. There should be a complete code of signals for the engine-room, leading from every portion of the factory where machinery is used. The gong used should be of a size to be easily heard in the boiler-room, as then the stoker can shut off the engine if the engineer is temporarily absent. Many distressing accidents happen by persons being caught in the shafting and machinery. The prompt stopping of the engine is of the utmost importance. In too many shops the engineer is also the steam and gas engineer of the establishment, and is more frequently found in the shop than in the engine-room.

Avoid oiling accidents by doing this work out of work-hours (when the shafting is at rest), paying the workman detailed a special price for the constant supervision. The jars and motion communicated to the workmen by machinery and pounding are more injurious than at first supposed. The body absorbs the concussion and produces a tired feeling upon all but the most robust.

The difference between a well and poorly conducted factory is as great as between riding in a Pullman and a caboose. Great care is needed relating to noise. Workmen on up-stairs floors should be cautioned against jumping from the benches to the floor, or dropping tools or heavy pieces of work. Sheets of thick rubber are used with good results under pounding-blocks, etc., to absorb the jar. Even in well-constructed buildings, the addition of a special beam or brace will often prevent the trouble from jarring machinery. In our factory the annoyance from a fussy jig-saw, running at a high rate of speed, was overcome by this method. Heavy machinery upon the first floor would better rest upon a separate foundation.

For general purposes the best seats will be found to be the ordinary four-legged, wooden-seated stool, with a home-made back added. This back is a thin piece of springy board, the top rounded off, and bolted to the seat and lower round. This seat is easily mounted and dismounted. For persons standing or sitting, a foot-rest will be found of great service; for, by frequently changing from one foot to the other, the limbs are kept in a good condition. This is important to rheumatic and heavy-limbed persons. Experience has taught us that, other things being equal, in making a journey we should select a route having cars with side foot-rests.

Saws are the leading element of danger in many factories. Probably ninety per cent of all the accidents are the direct result of the violation of that golden rule, "Never put your hand *back* of a running saw." A piece of wood sticks a little, or a chip lodges at the back of the saw; the temptation presents itself for the workman to remove it without stopping the saw. He takes the risk, and perhaps carries a mutilated hand through life as the result. At the back of medium and large splitting saws, use a "horn." This keeps the cut open and permits the saw to do its duty without pinching. Saws, in many kinds of work, may be covered, presenting only a slight cutting surface. Many of the circular saws are made for special work, and differ from the old-fashioned type in that a certain proportion of the teeth are hooked, instead of pointing outward. A workman would be badly mutilated on the former saw by his hand being drawn in, while the latter would have a negative if not a repelling motion. It will be seen why these new saws demand great care upon the part of those running them. The foreman of our wood-shop says "he does not want a man to touch a saw who is afraid of it." He instructs a new hand as to the dangers, how to avoid them, and expects a cautious confidence to do the rest. During his administration of several years there has not been a serious injury in his department.

Universal molding-machines, and others of that class, using a post or cutter-head for holding the cutters, are most dangerous articles. The tendency is to draw in anything brought in contact. The general remarks applied to saws apply to these. There is one danger from these machines, even to the experienced hand, that is, he may forget, when shifting the knives, to tighten them up, if his attention is temporarily called away. We had one accident of this nature in our factory. It has been said there is not a person who has run one of these machines any length of time who has escaped without mutilation or cuts. We cannot contradict this assertion from our own knowledge.

In showing visitors over a manufacturing establishment, request them to lay aside their cigars, and impress upon them the importance of considering each piece of machinery as in motion. A nicely running saw or cutter-head, to many, conveys the idea of an object at rest.

Grindstones, if running at a high speed, should be covered.

They, as well as emery wheels, should be placed in a room by themselves, or in a corner, out of the way of the other workmen. Many bad accidents have been the result of broken wheels. Fewer belt accidents would occur were loose pulleys more generally used, instead of leaving a belt to hang on the shaft when not in use, and putting on while running.

Some workmen have a practice of laying down their tools with the cutting end projecting over the edge of the bench. This is done to save the cutting surface. A better plan is to lay the tool point away from the workman and resting on pieces of wood on the bench. We recall a case of a marketman who, leaving his knife pointing outward, jumped forward in the act of hanging up some mutton, and received a fatal wound.

The liquor question, in a general way, it may not be proper for us to consider, but in its bearings upon factory life it is important. No workman should be permitted to work while under the influence of liquor, nor to run a piece of machinery till he has fully recovered from the effects of a spree. The chronic, disordered condition of some workmen, after vacations and holidays, has caused many liberal-minded employers to contract the days off to the smallest possible number.

Accidents arise from amateur railroading, as in many cases the workmen act as switchmen or brakemen where side-tracks enter the factory grounds. If possible, the side-track should be in a straight line, as then a fair view may be had. Cars should not be moved at all without timely instruction and notice. It is quite common, where there are several cars, to leave one or more spaces for a passage-way through. Fatal accidents have resulted from pushing the cars together without notice. Reckless engineers delight in giving the cars a good "kick" in switching, when they know a green hand is at the brake. This trick was played upon a friend of ours upon his own premises. Had one of his men been at the brake, a fatal accident would have been the result. Even with his experience and strength, the car reached the dead end with a force that threw him from the car, leaving him hanging from the brake by his powerful arms.

Machinery kept constantly running, and under inspection, is less liable to break down and cause accidents than where it remains idle a good portion of the time.

Where the workmen are of good habits, it is better in depressed times to give vacations in turn rather than close entirely, or to give full work to only a few.

We believe in placing a seriously injured person as soon as possible under the care of a competent surgeon. In most places a few minutes must elapse before such skill is obtainable; hence the importance of such intelligent action as will present the patient to the doctor in the best condition. Concise elementary directions, in case of accidents, published under medical supervision, are now obtainable in the large cities. These are printed upon card-board, and at least one of these notices should be posted in every factory. To supplement and carry out the medical directions recommended, an emergency box should be kept safely in some known place, and under the charge of some cool-headed, intelligent person. The emergency box should contain a few bottles of medicine, such as brandy, arnica, etc., prepared by an apothecary, each bottle properly labeled. The selection of the medicine should be left to a doctor or to an apothecary who has knowledge of the dangers of the factory. Besides the above, each case should contain a Martin's rubber bandage and a piece of rubber tube for tying; some small, strong rubber bands. These articles are for use in case of bleeding. A box of surgeon's plaster, cloth bandages, sponge, graduating glass (tea and tablespoonfuls), a medicine-holder with spout, and a folding fan.

From a lay point of view, we think the medical gentlemen have, in their instructions, given all that is required where assistance is within easy call, excepting the manner of handling. This subject has not received the attention it should, as "kind hands" are often very ignorant and clumsy. We believe a series of illustrations, showing the proper manner of lifting and supporting sick or wounded persons, would be of great benefit, not only to the factory but also for the home.

A factory located in a good-sized city has the advantages of hospital ambulance and police patrol service. Where such wagons are in use, we recommend that each factory should own a stretcher fitting the vehicles. By this means a disabled person may at once be laid upon a stretcher ready for the hospital attendants upon their arrival. For other purposes, use a stretcher constructed in accordance with the views of the local doctor, not, however, losing sight of the removable handles, by which means, in severe cases, the handles may be removed, leaving the canvas upon the bed and under the patient.

To obtain the *best* medical attendance is often a serious matter for the disabled mechanic, owing to his lack of funds. The public hospitals, in the large cities, are all that could be expected but they cannot cover the whole, and take care of every one needing medical assistance. Every establishment employing one hundred hands or over should organize a mutual relief association for the purpose of paying medical fees and nursing. The money could be used for paying for a free bed in some hospital. Where this convenience does not exist, an upper room in some comfortable building should be secured for the dangerously sick or wounded. We think in an establishment of ordinary risk a regular contribution of ten cents a week will be sufficient to pay all ordinary demands; any excess to be assessed, but not to exceed twenty-five cents in any one week. Many workmen regard going to a hospital as but one remove from entering a jail. This ignorant idea should be dispelled, and would be by an acquaintance with any good hospital where trained nurses are employed. This idea, we feel, is quite common, and more popular information is required, so that a man will believe he enters a hospital to be *cured*, and not to die.

A shop danger (but thanks to local health officers a lessening one) is that from contagious diseases. Most American-born workmen recognize and respect the benefit of restriction in such cases. Many of foreign birth disregard these limitations, and recklessly endanger their fellow-workmen. As the latter are almost invariably the ignorant and most superstitious, relying upon charms rather than upon medical skill to effect a cure, the remedy suggested would seem to be, — restraining power first, then popular instruction. We consider the subject of personal cleanliness of more importance than the general shop condition. We know of a painter who attributes a large portion of the sickness of his trade to their handling their food and face with soiled hands, his rule being to keep his hands away from his mouth unless they are perfectly clean. The hair and whiskers require to be kept clean. Few persons are aware how readily they absorb and hold impurities and particles from the atmosphere. In cleaning up, a few drops of ammonia in warm water will be found an excellent wash for the hair and whiskers, as it is, indeed, for the rest of the body. Hot water cannot always be conveniently carried over a building. In our factory we overcame the difficulty in this way: Our washing-up sinks are the ordinary long iron ones. At one end is placed a copper vessel holding several gallons. A cold-water pipe leads to this vessel, and a steam-pipe enters it. By turning the steam-valve the water may be blown up and heated as hot as desired. The hot water from this tank is dipped into the basin and tempered from the independent cold-water faucet to suit.

Workmen who bring their dinners should be furnished with facilities for heating or making tea or coffee. The refuse of all fruits, peach-stones, and banana skins in particular, should be thrown into some proper receptacle. The floor is a most dangerous place when sprinkled with these articles.

Persons at work over poisonous substances should talk but little while at work; by so doing they breathe more through the nose. We have in mind a great talker, — a painter, — whose system seemed to be charged with the white lead paint which he applied to small articles upon the bench before him. His roommates, of a less gossiping nature, escaped seemingly uninjured. The above occurred in a better-lighted and ventilated paint-room than is ordinarily seen. The physician summoned to this painter quickly diagnosed the trouble as lead-poisoning, and stated the cause as readily as though he had been a shop-mate.

Most factories abreast of the times, whether engaged in metal, wood, or textile manufacturing, have special processes in which the use of poisonous chemicals is required. These should be kept in glass or earthen receptacles, properly labeled with the word "Poison," the antidote also being added. The best chemists now furnish their preparations thus labeled.

Economy of space in some buildings requires that the overhead (ceiling) spaces be used. Where this is done, keep the articles hung up away from over the work-benches as much as possible.

Use hooks or pins, the outer ends of which are the highest. This prevents jars sending down the articles hung up. Pack goods on overhanging shelves so they cannot be shaken down. Keep tools, flower-pots, etc., off the window-sills, unless there is a guard to the window. One of our most respected state governors, now in office, once had a narrow escape from a flower-pot that fell from an upper window.

Observation has convinced us that the ordinary set rules, no matter how well framed, are distasteful to the average person, and fall short of the mark. Our attention was recently called to a set of rules for the guidance of a large bindery and printing establishment. It would hardly be possible for any one to comply with all of the requirements. One rule, however, so covered the whole that we repeat it from memory: "An honest day's work will be required for a full day's pay." Any person who is not willing to comply with this should be discharged. Each foreman should be held accountable for those in his immediate department, and he should have authority to discharge for cause. He should be consulted in taking on new hands.

The introduction of special machinery in almost every manufacturing department has, in our opinion, a tendency to dwarf the man mentally, less skilled hand-work being required than under the old system. What we now consider as a trade was once only part of a trade. This dwarfing of the mental faculties requires a counteracting influence, which must, we believe, come mainly through reading. We advocate anything that will enlarge and improve the mental condition. In view of the above, we recommend that each establishment have only the common rules posted, such as relate to smoking, elevators, etc., and that all details be printed in book form and given to each person employed. This book is to convey, in the way of *suggestions*, what is expected. The ideal must not be above the reach of any person in the factory. The truth should be advanced that the interests of employer and employés are identical. Each person should feel that he is responsible for not only his own welfare, but also for that of his shop-mates. We believe such a presentation of the case will arouse in each workman an idea of his responsibilities, and a purpose to incorporate the suggestions in his daily shop-life.

EXPENSES.

The following is a generalized statement of the expenses of the board, chargeable to the annual appropriation:

Salary of secretary	$2,000.00
Salary of clerk	500.00
Traveling expenses, etc.	360.70
Analysis of water and foods	215.10
Plates and printing	128.60
Instruments and office accessories	129.40
Veterinary advice, etc.	33.50
Total	$3,367.30

The epidemic fund stands the same as reported one year ago, to wit:

Appropriated in 1885	$5,000.00
Expended in 1885–86	260.50
Balance in hands of state treasurer	$4,739.50

APPENDIX.

HEALTH OFFICERS OF THE STATE OF NEW HAMPSHIRE, 1887.

In all towns in the State not named the selectmen constituted the health officers at the time this list was compiled, in May, 1887. It is probable that some towns have since appointed health officers under the provisions of chapter 14, Pamphlet Laws, 1885.

Antrim	Isaiah G. Anthoine	Physician.
	Abner B. Crombie	Landlord.
Ashland	A. R. Garey	Physician.
Auburn	Freeman A. Babbitt	Physician.
	Alfred D. Emery	Farmer.
	Dennin Donavan	Farmer.
Bath	Jonathan Brownson	Physician.
Berlin	Henry F. Wardwell	Physician.
	Daniel J. Daley	Lawyer.
	Eugene W. Scribner	
Bethlehem	H. A. Hildreth	Physician.
	J. M. Rowe	Farmer.
	W. H. Presby	Farmer.
Boscawen	E. E. Graves	Physician.
	A. C. Alexander	Physician.
	W. G. Buxton	Lawyer.
Bristol	Ira S. Chase	Physician.
	Clarence A. Smith	Blacksmith.
Brookline	A. S. Wallace	Physician.
Chester	Arthur L. Emerson	Physician.

Chichester	Samuel W. Langmaid	Farmer.
	George W. Murdough	Farmer.
Claremont	Hosea W. Parker	Lawyer.
	Osmon B. Way	Physician.
	C. W. Tolles	Physician.
Concord	Granville P. Conn	Physician.
	Herbert C. Cummings	Physician.
	E. O. Pearson	Editor.
	Howard M. Cook	
Conway	Simeon A. Evans	Physician.
	Joseph H. Pitman	Physician.
	William H. Bragdon	Physician.
Dover	Charles H. Hall	Laborer.
	James McCooly	Laborer.
	Elbridge Smith	Painter.
Dublin	Henry H. Smith	Physician.
Exeter	Lafayette Chesley	Physician.
	John H. Brown	Carpenter.
	Hezekiah Scammons	Farmer.
Farmington	Jeremiah S. Elkins	Physician.
	Alvah H. Hanson	Shoecutter.
	Warren P. Blake	Physician.
Gilford	Oliver Goss	Physician.
Gilsum	Israel A. Loveland	Physician.
	Ezra G. Johnson	Clerk.
	Samuel W. Dart	Mill Owner.
Goffstown	Chas. F. George	Physician.
	Frank Blaisdell	Physician.
Gorham	Robert I. Heath	Machinist.
	Edward M. Wight	Physician.
	Nathan D. Hyde	Physician.
Goshen	F. P. Jones	Physician.
Greenland	William O. Junkins	Physician.
Hampstead	Josiah C. Eastman	Physician.
	Daniel H. Emerson	Carpenter.
	Francis H. Sawyer	Farmer.
Hanover	Robert Fletcher	Prof. Dart. Col.
Harrisville	George H. Smith	Machinist.

Haverhill	Charles R. Gibson	Physician.
	Charles Newcomb	Physician.
Henniker	George H. Sanborn	Physician.
Hillsborough	M. H. Felt	Physician.
	B. K. Webber	Lawyer.
	John H. Goodale	Physician.
Hinsdale	Henry R. Vaille, Jr.	Notary Public.
Hopkinton	Jeremiah W. Wilson	Physician.
	Walter K. Wadleigh	Physician.
Keene	Ira J. Prouty	Physician.
	Edward P. Dole	Lawyer.
	A. B. Thurston	Physician.
Laconia	Thomas F. Ford	Carpenter.
Lancaster	J. I. Williams	Civil Engineer.
	Ivan W. Quimby	Printer.
Lebanon	Charles A. Downs	Civil Engineer.
	F. C. Churchill	Manufacturer.
	H. P. Kendrick	Druggist.
Lisbon	Dudley C. Moulton	Blacksmith.
	Charles Moffett	Meat Market.
	John M. Thompson	Physician.
Littleton	F. T. Moffett	Physician.
	J. W. Remick	Lawyer.
	J. Stevens	Marble Cutter.
Manchester	George A. Crosby	Physician.
	George C. Hoitt	Physician.
	Joseph B. Sawyer	Civil Engineer.
Marlborough	J. A. Leet	Physician.
Marlow	Orvill S. Rogers	Farmer.
	Henry H. Huntley	Farmer.
	Leander B. Huntley	Farmer.
Meredith	B. B. Rollins	
Milford	W. H. W. Hinds	Physician.
	H. S. Hutchinson	Physician.
	Wm. M. Knowlton	
Nashua	Willard C. Tolles	City Marshal.
	George A. Underhill	Physician.
	Charles S. Collins	Physician.

Newmarket	Samuel H. Green	Physician.
	J. Low Elkins	Physician.
	Charles E. Tasker	Undertaker.
Northfield	J. P. Osborne	Physician.
	C. R. Gould	Physician.
	Richard Firth	Manufacturer.
	S. B. Peabody	Manufacturer.
Plainfield	H. Sleeper	Physician.
	E. G. Beers	Physician.
	H. Cooper	Physician.
Plymouth	Hiram Clark	Retired.
	Haven Palmer	Physician.
	Chas. J. Gould	Tinsmith.
Peterborough	W. D. Chase	Physician.
	J. H. Cutter	Physician.
	Eben W. Jones	Surveyor.
Pittsfield	William Tasker	Farmer.
	Daniel K. Foster	Prin. of High School.
Portsmouth	John J. Berry	Physician.
	Samuel Spinney	
	John J. Grogan	Laborer.
	Benjamin M. Parker	Clerk in Navy Yard.
Rollinsford	William B. Mack	Physician.
	Ebenezer S. Nowell	Sta. Agt. B. & M. R. R.
Rochester	Stacey E. Colomey	Shoemaker.
	J. Frank Reed	Stonecutter.
Sunapee	E. C. Fisher	Physician.
Stratford	H. W. Blanchard	Physician.
	John C. Pattee	Merchant.
Seabrook	William A. Rand	Clergyman.
	Jeremiah Chase	Merchant.
	Daniel W. Colcord	Physician.
Swanzey	George I. Cutler	Physician.
	John C. Bourn	Nurse.
Warren	John F. Willey	Physician.

Whitefield	J. L. McGregor	Physician.
	G. H. Morrison	Physician.
	Wm. K. Quimby	Merchant.
Wilton	George W. Hatch	Physician.
Wolfeborough	Oliver Dowlin	Dentist.
	Herman I. Berry	Physician.

SANITARY ORDINANCES OF THE CITY OF CONCORD.

AN ORDINANCE RELATING TO THE PUBLIC HEALTH.

Be it ordained by the City Council of the City of Concord, as follows:

SECTION 1. The city council shall, before the 15th day of April, 1887, by joint ballot, elect three health officers, one for a term of three years, one for a term of two years, and one for a term of one year, one of whom shall be a physician, to be styled "The Board of Health of the City of Concord"; and the city council shall annually thereafter, by joint ballot, before the 15th day of April, elect a person for a term of three years to take the place of the member of the board whose term of office expires. They shall be chosen, so far as possible, with special reference to their fitness for the office, and the board shall have all the power given such officers by the laws of the State and ordinances of the city, and shall continue in office until their successors are chosen.

SECT. 2. The members of the said board of health shall meet within ten days after their election, and shall organize by choosing one of their number president and another secretary. They shall nominate some person who, in their judgment, possesses the qualifications necessary to constitute an efficient sanitary officer, and shall send such name to the mayor of the city within twenty days after the creation of the board; and the city council in convention, at their first meeting after receiving the name of the person so nominated, shall proceed to ballot upon the confirmation of said person as the sanitary officer of the board; and if he shall receive a majority of the ballots so cast, he shall be declared elected. If the nomination be rejected, the board of health shall be notified of the fact within two days thereafter, and it shall within four days after such notice nominate another person for such office, whose name shall be presented and acted upon in like manner. Should a second nomination be rejected, the board of health and city council shall continue in similar manner until some person is chosen for the office. The meeting or meetings of the city council, for the purpose of acting upon second or subsequent nominations, shall be called within four days after the mayor has been notified of the nomination by the board of health. If the board of health neglect to make the nomination or nominations required under this section, the city council may, at their first meeting after the expiration of the time specified for nominations, proceed to elect a sanitary officer.

SECT. 3. The sanitary officer shall devote his entire time, from the 1st of May to the 31st of October, to the performance of the duties imposed upon him by virtue of his office, and from the 31st of October to the 1st of May shall investigate all complaints relating to nuisances that may be brought to his attention. He shall receive for his services, from May 1 to October 31, the sum of two dollars and fifty cents per day, and from October 31 to May 1 the sum of fifty cents per hour, for such time as he shall be employed under the direction of the board of health; but his charge for services in any one day shall not exceed the sum of two dollars and fifty cents. He shall act as the executive officer of the board of health, shall serve all orders and notices issued by the board, and shall enforce all rules and regulations issued by the board, as well as all the ordinances and rules relating to nuisances or other conditions affecting the health and comfort of the public.

SECT. 4. The sanitary officer shall, under the direction of the board of health, in the first week of May, commence a systematic, house-to-house sanitary inspection, which shall continue until the inspection of the city is completed. The sanitary officer shall require the abatement within a reasonable time of all nuisances found; shall give such advice and make such recommendations to householders and others as he may deem necessary to secure good sanitary conditions.

SECT. 5. The board of health shall prescribe a blank form, upon which a complete record of the inspections made by the sanitary officer shall be entered; a record shall also be kept by the sanitary officer of all complaints made to him or the board; of all orders issued; of all notices served, and of all nuisances abated. All the records kept by the sanitary officer shall be submitted to the board of health whenever called for, and shall at the end of each fiscal year be placed in the hands of the city clerk.

SECT. 6. The sanitary officer shall see that sections 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, of chapter 22, of the Revised Ordinances of 1884, relating to sewers and drains, are enforced; and shall perform such other duties in the enforcement of the provisions of said ordinance as may be authorized by the city council, or the committee on sewers; he shall also enforce the provisions of section 2, chapter 21, relating to the pollution of the waters of Penacook Lake.

SECT. 7. No person shall place or leave, or cause to be placed or left, in or near any highway, street, alley, or public place, or in any private lot or inclosure, or in any pond or other body of water, where the current will not remove the same, any rubbish, dirt, soot, ashes, hay, shreds, oyster, clam, or lobster shells, tin cans, decaying fruit or vegetables, waste water, or any refuse animal or vegetable matter whatsoever, nor keep in or about any dwelling-house, barn, shed, store, shop, or cellar, any of the aforesaid substances, in any manner liable to become putrid or offensive, or injurious to the public health.

SECT. 8. No person or persons shall suffer or permit any cellar, vault, private drain, pool, sink, privy, sewer, or other place upon any premises or grounds belonging to or occupied by him or them to become offensive, or injurious to the public health.

SECT. 9. No person or occupant, or any person having control or charge of any lot, tenement, premises, building or other place, shall cause or permit any nuisance to be or remain in or upon said lot, tenement, building, or other place, or between the same and the center of the street, lane, or alley, adjoining.

SECT. 10. No person or persons shall erect, maintain, or use, within the compact part of any ward in the city, any pen or sty for swine, swill-house, or building for rendering any offal, tainted or damaged lard, tallow, or any putrid animal substances, or for the deposit of green pelts or skins.

SECT. 11. No person or persons shall keep or use any hog-pen, goat-pen, chicken-coop, or barnyard so near to any public highway as, in the opinion of the sanitary officer, may be offensive or injurious to the public health, or adjoining or abutting any lot upon which any other person resides, if so near them as to be offensive, or in any manner that the contents of such hog-pen, goat-pen, chicken-coop, or barnyard are discharged on said lot, or any street, lane, or alley in the city.

SECT. 12. The owner, agent, occupant, or other person having the care of any tenement used as a dwelling house, or any other building, shall furnish the same with a sufficient drain, under ground, to carry off the waste water; and also with a suitable privy, which, if not properly connected with the public sewer, shall have a vault which shall be sunk under ground, and built in the manner hereinafter prescribed, and of capacity proportionate to the number of inhabitants of such tenement, or of those having occasion to use such privy; and no person shall suffer any waste or stagnant water to remain in any cellar, or upon any lot or vacant grounds by him owned or occupied, in the compact part of any ward of the city.

SECT. 13. All vaults, privies, and cesspools shall be so constructed that the inside of the same shall be at least two feet distant from the line of every adjoining lot, unless the owner of said adjoining lot shall otherwise agree and consent; and also from any street, lane, alley, court, square, public place, public or private passage-way. Every vault and cesspool shall be made tight, so that the contents thereof cannot escape therefrom, and shall be securely covered; and no person shall open a vault, privy, or cesspool, or remove the contents thereof or haul such contents through any street in the city, from and after the first day of May to the first day of November of each year, between the hours of six o'clock in the morning and nine o'clock in the evening.

SECT. 14. Any person or persons intending to construct a privy vault or cesspool, shall first obtain a written permit to do so from the board of health, signed by the sanitary officer. Each permit shall designate the location on lot, distance from any house, well, or spring, the kind of vault or cesspool, and the depth thereof; said permit shall contain a printed abstract of the state law and city ordinances relating to the construction of privy vaults and cesspools; but no cesspool for the reception of sink or other waste water shall be constructed within one hundred feet of a public sewer; no abandoned well shall be used as a privy vault, cesspool, or sink.

SECT. 15. When any vault, privy, cesspool, or drain shall become offensive or obstructed, the same shall be cleansed and made free; and the owner, agent, occupant, or other person having charge of the premises in which any vault, privy, cesspool, or drain may be situated, the state or condition of which shall be a violation of the provisions of this chapter, shall remove, cleanse, alter, amend, or repair the same within such reasonable time after a notice in writing to that effect shall be given to either of them by the sanitary officer as shall be expressed in such notice. In case of neglect or refusal so to do, the board of health may cause the same to be removed, altered, amended, or repaired, as they may deem expedient, at the expense of the owner, agent, occupant, or other person as aforesaid.

SECT. 16. No manure from stables, barns, or any other place within the compact part of the city, shall be allowed to accumulate until it becomes offensive to persons residing in the vicinity, or passing along any street, lane, or highway; and no swill or garbage, or any animal or vegetable substances, shall be allowed to accumulate in or about any premises until the same shall become offensive or putrid.

SECT. 17. The prudential committee, or boards of education, shall not admit any scholar into the public schools without satisfactory evidence that such scholar has been vaccinated; and the city physician shall at all times be prepared to vaccinate, at the expense of the city, any scholar who, from poverty, is unable to pay therefor.

SECT. 18. It shall be and is hereby made the duty of every physician, surgeon, or other person attending upon a case of small-pox, epidemic cholera, epidemic dysentery, diphtheria, scarlet fever, typhoid fever, measles, yellow fever, or other dangerous, contagious, infectious or pestilential disease, and every householder, attendant, or agent, in whose house a case of any such disease occurs, shall report every such case to the sanitary officer, or the board of health, within twenty-hours after first having knowledge of the same, giving the number of the house, the street, avenue, or lane upon which it is situated, and the name of the occupant or occupants, with the name and age of the diseased person, if known; and the board may take such action as they deem expedient to prevent the spread of such disease.

SECT. 19. All petitions for the cleansing, removing, or abatement of any nuisance, shall be made to the board of health, or to its executive officer, or to any one of them, verbally or in writing, stating distinctly the character of such nuisance, the premises where situated, and the reason for its removal or abatement; but if it becomes necessary to institute legal proceedings against the party or parties complained of the complainants shall, before such proceedings are instituted, file a complaint in writing with the board.

SECT. 20. A notice served on an owner, agent, or occupant of any property, or left at the private residence of the owner, or agent or occupant, or if after due notice neither can be found, posted on the front door, or wall or fence of such property, and a like notice sent to his last-known post-office address, shall be considered sufficient and ample notice.

SECT. 21. The sanitary officer shall have the same power to make arrests as is by ordinance and law conferred upon the regular police of the city, in all cases where any person or persons shall violate the laws of the State, city ordinances, orders, rules, or regulations relating to the health of the city, and shall wear a uniform and badge to be prescribed by the board.

SECT. 22. The board of health shall provide itself with such blanks and record books, at the expense of the city, as are necessary, and shall, at the close of each financial year, make a report to the city council of all complaints made to them, and the cause for the same, with such suggestions pertaining to the health of the city as it may deem expedient to present; so much of the vital statistics as is necessary; the cause of death so far as possible, and such other sanitary information as may be called for by the city council.

SECT. 23. The board of health may make such rules and regulations for the prevention and removal of nuisances, for the control and restriction of infectious and contagious diseases, and such other regulations relating to the public health as in their judgment the health and safety of the people may require, which shall take effect when approved by the city council, recorded by the city clerk, and copies thereof printed and circulated among the citizens, or published in one or more of the daily papers of the city, or both.

SECT. 24. The board of health shall meet at such times and places as it may deem necessary for the consideration of matters relating to the public health; they shall investigate, inquire into, and advise in all cases referred to them for such purpose by the sanitary officer, and shall direct him in such cases. In case the sanitary officer of the board is unable to act as the executive officer of the board, through sickness or other good cause, the board may elect a suitable person to act temporarily in his stead, and the said person shall, while so acting, possess all the authority, with the same compensation, given the sanitary officer under the provisions of this chapter. The members of the board of health shall receive, as compensation for their services, the sum of twenty-five dollars each, annually.

SECT. 25. Any person or persons, company, or corporation, who shall violate, or cause to be violated, by agent or otherwise, any or either of the sections of this chapter, or any or either of the provisions thereof, or any or either of the orders, rules, or regulations of the board of health, or who shall fail or neglect to comply with any or either of the requirements thereof, by agent or otherwise, upon conviction thereof before the police or other court of competent jurisdiction, shall be fined not less than three dollars and not more than one hundred dollars, with the costs of prosecution, for each offence, except in cases where the punishment is made and provided for under the laws of the State, in which cases the penalties so prescribed shall be imposed.

SECT. 26. Section 4 of chapter 6, and sections 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14, of chapter 14, of the Revised Ordinances of 1884, are hereby repealed; also such ordinances and parts of ordinances as are inconsistent with this ordinance are hereby repealed.

[Passed March 31, 1887.]

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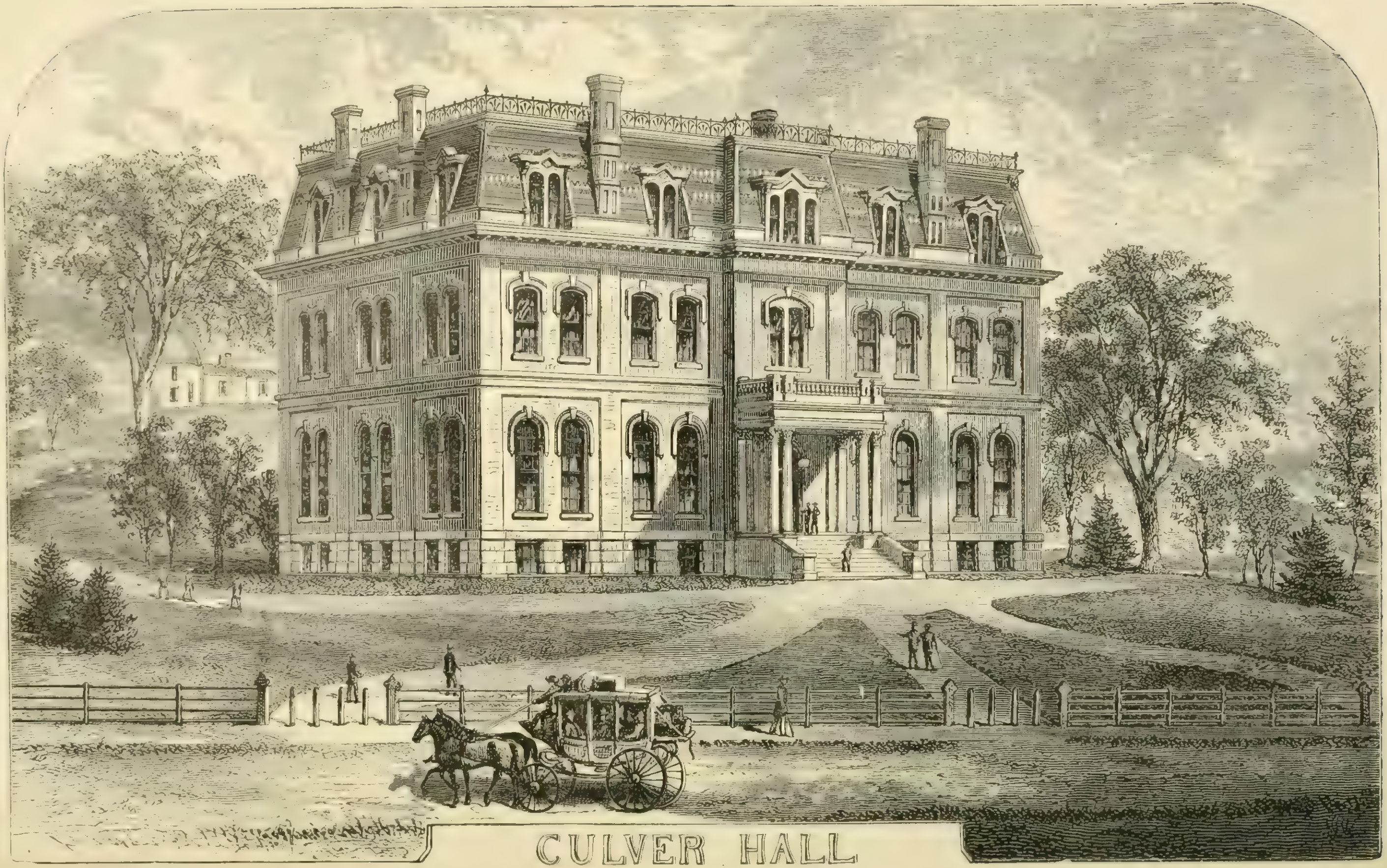

CULVER HALL

SEVENTEENTH REPORT

OF THE

BOARD OF TRUSTEES

OF THE

COLLEGE OF AGRICULTURE

AND

MECHANIC ARTS

TO THE

NEW HAMPSHIRE LEGISLATURE,

JUNE SESSION, 1887.

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

BOARD OF TRUSTEES.

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CALENDAR.

1886.

September 9. First term of fifteen weeks began — Thursday morning.
December 22. First term ended — Wednesday noon.

WINTER VACATION OF FOUR WEEKS.

1887.

January 20. Second term of thirteen weeks began — Thursday morning.
April 18-19. Annual Examinations.
April 19. Smyth Prize Reading and Speaking — Tuesday evening.
April 20. Second term ended — Wednesday noon.

SPRING VACATION OF ONE WEEK.

April 28. Third term of nine weeks began — Thursday morning.
June 27-28. Examination for admission — Monday afternoon and Tuesday.*
June 28. Anniversary — Tuesday morning.
June 28. Meeting of Alumni Association — Tuesday afternoon.

SUMMER VACATION OF TEN WEEKS.

September 6-7. Examinations for admission — Tuesday afternoon and Wednesday.*
September 8. First term of fifteen weeks begins — Thursday morning.

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* Candidates will assemble at Library Room in Culver Hall, at 3 o'clock P. M.

REPORT.

To the Honorable Senate and House of Representatives in General Court convened:

In obedience to the statute law of this State enacted in A. D. 1866, we now present our seventeenth report of the New Hampshire College of Agriculture and the Mechanic Arts, embracing first a brief statement of our financial condition, and also our operations and progress during the last two years, commencing with the first day of May, A. D. 1885, and terminating with the 30th day of April, A. D. 1887. We have been induced to abridge the special detail of the items showing our various payments in behalf of the institution for the past two years, in order to make room for the researches of others connected with our college.

Our income as reported by Treasurer Smyth embraces the usual land fund of $4,800 annually accruing and specially devoted by act of Congress to tuition; next, the annual appropriation of our State, of $3,000, to be expended for general purposes; next, the average income of interest derived from the John Conant scholarships, which is to be specially applied to the support or assistance of students while at our institution. The treasurer has this year given us the sources of this fund, showing the amount and how invested at this time. The treasurer states to us that his report shows the original investment by Mr. Conant of most of the leading railroad stocks, and that they were wisely selected, and that if sold in the market now they would command a large gain. We are not aware that we have ever experienced any loss to this fund, though our treasurer has managed it without charge, freely accounting for all the income. John Conant, in his lifetime, granted free scholarships to indigent students resident in Cheshire county. Jaffrey, the town of his residence, might enjoy two scholarships ; all other towns in the county, one each. If any surplus existed, then the trustees of the college might assign the same to other indigent students of suitable qualifications who might desire to obtain an agricultural education, without confining the residence of the applicant to Cheshire county alone. On the 6th day of October, A. D. 1874, William P. Wheeler, Esq., of Keene, one of the Agricultural College trustees, and who was the attorney, also, of Mr. Conant, made this additional agreement with him, which now appears in writing: "If additional scholarships are not wanted, any surplus remaining may be used in rendering further aid if required, either in the form of a gift or of compensation for labor, to students who propose to devote themselves to agricultural pursuits." Mr. Conant also granted the free use of rooms to the indigent students. Our statute law also enjoins upon us free tuition to our needy students, and as a "gift" highly appreciated during the year past, we have been making efforts somewhat successfully to reduce the price of board to our students to the sum of $2.50 per week, by an arrangement made with the lessee of Conant Hall.

FINANCES.

Under our agreement with Treasurer Smyth we received from him during the year commencing with May 1, 1885, to May 1, 1886, the sum of $9,400 ; we expended during the same time, $9,353.18 ; leaving a balance to be accounted for of $46.82. Our account has been faithfully audited by our auditor, Joseph Kidder, Esq. Our expenditures include the annual salaries of Profs. Blanpied, Pettee, Scott, Jesup, and Robert Burleigh, our farm superintendent Whitcher, Prof. Cook in drawing, S. J. Blanpied in elocution; also our chaplain, Dr. Leeds, the fees of janitors and monitors, payments for coal and wood, chemicals for the laboratory, insurance, gas, printing, board of committees, repairs of buildings, the debenture of trustees, labor of students, fruit trees for the farm, and various other incidentals and expenses usually incurred. For the aforesaid payments we hold vouchers, which have been examined and allowed, as aforesaid, to the amount of $9,353.18.

For the next and last year terminating with the 30th of April, A. D. 1887,

We have received from the treasurer . .	$9,600.00
We also charge ourselves with the balance against us of last year	46.82
Making amount of cash received . .	$9,646.82
Whole amount of payments during the year past	9,342.97
Balance on hand May 1, 1887 . .	$303.85

It will be seen that our expenditures for the two years as well as our receipts have not materially varied in amount, though our money has been applied to different objects to some extent. There are still a few bills outstanding, but not enough to exhaust the money on hand.

IMPROVEMENTS.

Our statute law requires us to state the improvements acquired during the last two years. During the last season we made a special application to the secretary of the navy, that Lieut. Thomas W. Kinkaid, of the engineer department, might be assigned to our college to instruct in engineering, architecture, use of tools, drawing, and in all departments of science implied in the comprehensive term, mechanic arts. Mr. Whitney reluctantly surrendered Mr. Kinkaid to us for an indefinite time. At our recent annual meeting the trustees conferred upon him the degree of Professor of Civil Engineering. He comes to us well recommended, and has entered upon the discharge of the duties of his office.

We have already appropriated nearly $338 to enable the professor to purchase tools and machinery to supply his immediate wants. It becomes quite manifest he should have more commodious accommodations. He should have a building and the necessary furniture, suitable for the various exercises and instruction of his class, the illustration of his experiments, and the protection of his machinery already purchased. The estimated cost of such a building, with its appendages, need not be more than $4,000. As Prof. Kinkaid comes to us without the charge of a salary, he should be treated kindly and liberally. We report the professor as an improvement to our institution, already acquired; and the building aforesaid as a necessary improvement to be hereafter obtained, either by the benevolence of some good donor, or from an appropriation of our state Legislature.

THE HATCH BILL.

Again, we now have presented to us by the general government what promises to be a substantial improvement of our agricultural interests in all our States, if the provisions of what is known as the "Hatch Act of Congress" can be adopted, and carried into practical operation in good faith according to its reasonable requirements.

As we were the only agricultural college in existence at the time of the passage of the Hatch act, and as an experimental station had long been annexed to us, it seems to us that new and interesting duties and responsibilities are soon to be imposed on us, provided we become active partakers in the labor and rewards that hereafter may be presumed to accrue to us. One of the essential provisions of this act requires that it should be accepted by the state Legislature. The legislative act will of course contain any and all proper or legitimate provisions for the benefit accruing from the congressional act, provided our college, as a co-worker, shall so discharge its duties as to entitle us to receive its rewards. It appears to us that the second section of the act of Congress opens up a large field of patient labor. We give the substance of it clothed in its own language:

The second section of said Hatch act prescribes, that it shall be the object and duty of said experimental station to conduct original researches, or verify experiments, on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping, as pursued under a varying series of crops; the capacity of new plants for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States and Territories.

This act also prescribes that the commissioner of agriculture shall send out to the state colleges, definite rules or regulations that may serve as guides to them in their investigations, and in making timely and suitable returns to his department, and to others therein stated. To meet the demand made upon us by the Hatch statute will require all the ability and learning our faculty can furnish. The botanist, or he who is skilled in the science of zoölogy, or in the veterinary art, will be called upon to show accurate results of his scientific investigations. There probably will be more frequent application for the help and benefits of the skillful labor of the chemist, who may be able to analyze our various soils and fertilizers, and to explain both by theory and practice how our different soils may be enriched by the use and application of the most approved manures, or by the rotation of crops. The agricultural chemist may be called on to inform us as to the soil best adapted to promote the growth of our various plants, fruits, or trees, and how our soils may be improved by mixing the clay with the sand, and *vice versa.* In this State we should not omit the lessons that may perhaps be best taught by experience, — we refer to the introduction of the best breeds of animals, whether for the dairy, work, food, or other practical use. Our farmers are suffering great loss by keeping stock that does not repay them for the food they consume. Without further comment we may fairly assume, that under the liberality of the general government, guided by the directions of the able land commissioner, we may expect such reports and information as shall give new impulse and life to our cause, raise its standard higher, and yield substantial benefit to our colleges that have long needed this kind of encouragement.

QUESTION OF REMOVAL.

The question of the expediency of removing our institution to a more central position of the State, has been recently raised and submitted to an able committee appointed agreeably to an order of the Legislature of 1885. A report of this committee will be made to the Legislature of this year at the present June session. This intelligent committee has charge of the facts and reasons for and against a change of our location, and its decision in the premises will be entitled to much weight.

THE FARM.

Some criticism is made upon our farm in Hanover as not suitable for an experimental station. The basis of the farm soil purchased by John Conant is what is known as clay-loam. It is remarkable for its ability to produce the grasses, oats, peas, and most kinds of garden vegetables, such as onions, turnips, cabbages, beets, carrots, beans, etc. It is also well adapted to the growth of what are called small fruits, such as strawberries, raspberries, blackberries, and gooseberries. The long dry seasons have given us good crops of sound corn. The wet seasons have not proved so favorable. It is a good farm for stock-raising. That part of the farm purchased of Mr. Balch is either woodland or pasturage, in the ratio of about two thirds woodland, one third pasturage. The whole farm constitutes three hundred and sixty acres. Under suitable management this farm will show good results for what it is designed.

John Conant, who was one of the most successful farmers ever known in this State, and who was regarded as a man of accurate judgment, spent three days at Hanover in exploring the different farms in that vicinity, before he made choice of this lot, which was originally owned by a Mr. Tilden. He directed that a part of it should be drained. This was done; and now the drains need to be repaired or renewed, as adjudged by our committee. At our recent annual meeting the board of trustees found that Mr. Whitcher, our farm superintendent, had rendered efficient service during the past year, in the analysis of soils and in the department of agricultural chemistry generally, and that his instruction in these departments was still demanded. We therefore elected him Professor of Agriculture, and at the same time, through a special committee, authorized the employment of an aid or assistant to him in his capacity of farm superintendent. The committee accordingly employed Albert Wood, of Lebanon, under the agreement to pay him $350 for his work for one year, and also to furnish him board in the mean time.

OUR PROGRESS.

As to the progress of our institution and its present state, we can assure the public that we are out of debt, as the report of the treasurer will show. My connection with the institution has been continued with the understanding that I was to render to the treasury what aid I could to keep it free from the embarrassment of debt. By the aid lent to us from the State, we have so far succeeded to keep our little ship afloat. If the United States act of Congress were allowed to go into force, we think it quite probable we could realize some income from the work to be done under this act, which might reasonably be applied to the payment of some part of the salaries now entirely imposed and paid from our college funds. But, as Congress has made no appropriations to carry out the provisions of the Hatch act, it seems probable we shall be obliged to call upon our State for the aid of our usual annual appropriation of at least $3,000. When the Hatch bill does go into effect, we think the experimental station expenses, including the salaries of some of our working professors, and the chemicals, and the expenses incident to the laboratory, may perhaps be charged to the Hatch act.

Some two years since, Prof. C. W. Scott, connected with our college, spent much time and labor in collecting the statistics of our United States agricultural colleges, and showing the relative appropriations from the States where they exist, the number of graduates from each college, and other facts, all collated and issued in pamphlet form for the public use. Among all the colleges the most successful has been the Michigan Agricultural College. It graduated its first class in 1861. It was first established by state aid, and when the Morrill act passed it received possession of the entire Michigan land fund. The State has pursued a liberal policy towards this college, giving it $50,000 in 1881, and over half a million during the twenty-five years of its operation. The trustees and the State Board of Agriculture are indentical, and one report answers for both interests. The college of Michigan had about 200 students in 1881. From 1861 to 1882 it had graduated 244 students. Of these fifty-four per cent are connected with agriculture, only one agricultural student worker for every 8,000 of the population of that State. The Massachusetts college sends about thirty-five per cent of her graduates into agriculture, New Hampshire about thirty-three per cent, the college at Orono, Maine, hardly more than eleven per cent. Cornell, which is the richest northern agricultural college, and professes to give the best agricultural instruction, had in 1882 only fifteen agricultural students, only one for every 300,000 of the population of that State. The college graduated for eleven years only four per cent connected with agriculture. Illinois Agricultural University had twenty-one agricultural students in 1882, and among the 303 graduates of the institution for the last ten years, only thirteen per cent are connected with agriculture. California sends out, according to a newspaper, —— graduates devoted to the agricultural courses, and less than half turned up farmers. Our state college has been subject to severe criticism, because so few of the graduates have given their attention to farming pursuits. The answer is, that a majority of our students enter our college without capital, and when they leave us they are compelled to seek employment where they can best obtain some immediate aid. It is chiefly those graduates who have parents, or other friends who have farms or ability to furnish them, where their sons may be employed when they leave our college. Graduates in similar colleges to ours in Prussia, whose colleges are generally founded and supported by government, are there taken at once into the employment of government.

STATE AID.

Fault has been found by some because the State has been so liberal in her expenditures to aid us. She gave us $15,000 to erect Culver Hall. That is well secured by our insurance companies, provided they survive the recent fires. The balance of about $45,000, paid at different times and for different purposes, is found the least appropriation for the same time paid to any agricultural college by any State in the United States founded when we were — still we do not complain of our treatment.

OUR WORK AND PROSPECTS.

Our scientific institutions are generally in their infancy. We have strong faith in their ability eventually, after hard experience, to bring out profitable results to the people. During the past year we sent out several of our professors into various parts of the State to lecture upon such themes or subjects with which they were conversant. We understand they were well received and kindly listened to. They returned highly gratified at their good treatment, under the belief that their teaching had not been in vain. During the past two years we have had no cases of disorder, or occasion of discipline. Both officers and students have enjoyed good health, and been able to prosecute their studies and discharge their several duties in peace and harmony.

There have been two different and very capable and efficient examining committees, who have spent two days each year in listening to the questions proposed by instructors and answers given by the students in the different branches of science usually taught at our colleges. The reports of these intelligent committees will be entitled to much weight when read by the public.

CONCLUSION.

There are still other matters that might be properly here discussed, but we give way to Profs. Scott and Whitcher, who have other important suggestions and material for our report.

Respectfully submitted.

G. W. NESMITH,
President.

TREASURER'S NINETEENTH REPORT.

To the President and Trustees of the New Hampshire College of Agriculture and the Mechanic Arts:

Your treasurer respectfully submits his nineteenth annual report for the year ending April 1, 1886.

He charges himself as follows:

Balance in treasury April 1, 1885 . . .	$4,388.95
Income from Conant fund	1,409.60
Interest on New Hampshire bonds . .	4,800.00
State appropriations	1,500.00
Interest Merrimack River Savings Bank .	197.05
	$12,295.60

He credits himself as follows:

1885.		
May 7.	Paid on order President Nesmith .	$500.00
July 1.	" " " " .	500.00
Sept. 1.	" " " " .	3,500.00
Oct. 8.	" " " " .	500.00
Dec. 24.	" " " " .	500.00
1886.		
Mar. 4.	" " " " .	3,900.00
Balance April 1, 1886	. . . . .	2,895.60
		$12,295.60

FREDERICK SMYTH, *Treasurer.*

I hereby certify that I have examined the foregoing account of the treasurer, and found the same correct and properly vouched for.

JOSEPH KIDDER, *Auditor.*

TREASURER'S TWENTIETH REPORT.

To the President and Trustees of the New Hampshire College of Agriculture and the Mechanic Arts:

Your treasurer respectfully submits his twentieth annual report for the year ending April 1, 1887.

He charges himself as follows:

Balance in treasury April 1, 1886 . . .	$2,895.60
Income from Conant fund	2,894.50
Interest on New Hampshire bonds . .	4,800.00
State appropriation	3,000.00
Interest Merrimack River Savings Bank .	178.41
	$13,768.51

He credits himself as follows:

1886.			
June.	4.	Paid on order President Nesmith .	$500.00
	29.	" " " " .	1,000.00
Sept.	6.	" " " " .	3,000.00
Dec.	8.	" " " " .	700.00
1887.			
March	1.	" " " " .	3,200.00
	7.	" " " " .	700.00
Balance April 1, 1887			4,668.51
			$13,768.51

FREDERICK SMYTH,
Treasurer.

APRIL 1, 1887.

List of securities held by the New Hampshire College of Agriculture and the Mechanic Arts:

STOCKS.

104 shares Concord Railroad.
40 shares Boston & Maine Railroad.
38 shares Manchester & Lawrence Railroad.
22 shares Boston & Lowell Railroad.
69 shares Fitchburg Railroad.
30 shares Monadnock National Bank.
5 shares Concord (Mass.) National Bank.

WESTERN FARM MORTGAGES.

Orr Henderson, No. 3,650, at 7 per cent .	$1,000.00
R. Berger, No. 3,314, at 7 per cent . .	1,500.00
	$2,500.00

I hereby certify that I have examined the foregoing account of the treasurer, and found the same correctly cast and supported by the proper vouchers.

JOSEPH KIDDER,
Auditor.

APRIL 18, 1887.

APPENDIX.

APPENDIX.

REPORT OF EXAMINING COMMITTEE, 1885.

To the Board of Trustees of the College of Agriculture and the Mechanic Arts:

The committee appointed to attend the examinations of the classes in the above institution, at the close of the college year of 1885, submit the following report.

We are pleased to say that the various classes whose recitations came under our observation fully justified the opinion we had entertained of the ability and fidelity of teachers and scholars. The young men engaged in their work as though there was something to be done, and that they could do it. Self-reliant and thoughtful, the pupils received their questions and answered them after proper consideration, deliberately and intelligently, habits no doubt induced by the rigorous and exact requirements of their teachers. Your committee deem it unjust to make distinctions in the various examinations where all the classes acquitted themselves much to their credit and the credit of their teachers.

It appears that this institution has come to stay. Its sure growth, its hold upon the affections of the people of the State who know it best, its increasing popularity among those who are receiving its advantages, are guarantees of its success. The work that is done at the college needs only to be known to be appreciated. We believe here is the proper place to give the sons of our

State a just view of the great future that is opening before them. Here they are prepared to enter that future with honor and success. The advanced guard are already "holding the fort." From every vale and hilltop the sons of New Hampshire and adjoining States should fall into the ranks. We say it without flattery, deeply realizing what we say, that there are no more noble, self-reliant young men on the face of the wide earth than the sons of our State. The places of honor and trust that they have filled confirm it. The past and present confirm it, and the future demands its continuance. Is it wisdom for their fathers and mothers to hoard up their hard earnings and thereby withhold from their sons the privileges which the college invites them to accept?

There are some, perhaps, who think the science of agriculture is not sufficiently taught. For the information of those who may thus think, we call their atttention to the studies directly relating to the subject:

Prescribed course the first year: History of agriculture, farm machinery. Junior year: How crops feed, stock feeding and breeding, drainage and irrigation, fruit culture. Elective courses, second year: Forestry, veterinary science, American dairying, market and landscape gardening; also, natural history, physiology, physical geography, insects injurious to the farmer, botany, meteorology, structural botany, geology, mineralogy, and sanitary engineering; also, chemistry in all its divisions, especially that part of it relating to agriculture and the mechanic arts.

Dr. R. F. Burleigh, a former graduate, gave twenty lectures to a class of twelve on veterinary science. Lectures were also given by G. H. Whitcher on the science of feeding stock. If anything further is wanted on the subject, we refer to the yearly catalogue as published by the college.

The farm in connection with the college is under the supervision of Mr. G. H. Whitcher, a former graduate of the institution, and shows much skill and judgment. The Governor has called the attention of the present Legislature to the farm as an experimental station. Many agricultural colleges are devoting much attention in this direction. It is very desirable that this suggestion should be acted upon, and that bulletins be published monthly giving the results. Mr. Whitcher has already commenced a series of experiments, about forty in number, relating to the effects of the various chemicals and phosphates upon growing crops, which will be of great utility to the farmers of the State when the results are published. We noticed growing upon the farm twenty acres of corn, one of potatoes, four of rye, four of barley, six of beans, seven of oats, four for soiling purposes, all in good condition.

In closing this report it is just to say, that the college and the farm, and all the appurtenances and appliances therewith connected, meet our approbation.

Respectfully submitted.

J. B. SMITH.
E. C. MERRILL.
S. B. WHITTEMORE.

REPORT OF EXAMINING COMMITTEE, 1886.

To the Trustees of the New Hampshire College of Agriculture and the Mechanic Arts:

We, the undersigned, a committee appointed to examine the classes in the New Hampshire College of Agriculture and the Mechanic Arts at the close of the college year, April 19, 1886, respectfully submit the following report.

THE CLASSES.

Classes were examined by us in trigonometry, rhetoric, geometry, physics, chemistry, astronomy, sanitary science, stock-breeding, and chemistry of the farm. The ages of the students in these classes were from fifteen to twenty-five years. They all appeared to be young men who came here to work, not sent here by rich parents to pass away the time; they evidently had worked, most of them, faithfully, and had received competent and thorough instruction from the professors, who appeared to be the right men for their respective chairs, thoroughly competent, willing to do, and active workers for the advancement of the interests of the college and the success of their pupils. All the recitations were satisfactory.

Through you, to the farmers of New Hampshire, we would say that these studies pursued by the students are all thoroughly practical; there is nothing about them which would lead a farmer's son to dislike farming, but rather increase his love for it, if he had any, by making him see that he can use his brains, as well as his hands, in farming. It is a false and pernicious idea that some farmers have that education will make their sons dislike work on the farm. They will dislike, no doubt, the old and poor ways of doing work, methods that do not pay and that ought to be discarded at once and forever.

WHAT WAS DONE IN THESE CLASSES.

The examination of the classes afforded your committee great pleasure, and we mention some of the work that is done, so that the farmers may get some idea of the advantages afforded by the college. In the study of sanitary science the students receive instruction in the best methods to be used in the ventilation of houses and barns, the proper way to drain the land around the buildings and the fields used for cultivation of crops, so that there may be the least possible sickness arising from the surroundings of the family, which matters alone are of the utmost importance to successful farming, for no farmer can be successful if he or his family is sick a greater part of the time. In the study of the chemistry of the farm the students learn those rules and principles which enable them to analyze soils and manures, and thereby know just what kind of manures are best adapted to a particular soil or field in order to obtain the best results in crops. In the past, New Hampshire farmers have wasted an incalculable amount of money, labor, and energy, which would have been saved and have enriched the State, had the farmers known what these boys know who graduate from the college here. In stock-breeding the students are given a knowledge of the various kinds of stock; for what each kind is best adapted; how to breed and care for them successfully and profitably. In the other studies are imparted that knowledge and culture which quickens the intellect and renders it capable of studying and mastering the problems in business and matters of every-day occurrence which need to be, and must be, intelligently dealt with to make life a success, to make it worth living. Prof. Jesup instructs the students in botany, so that the young farmer can know the nature and characteristics of the weeds he has to subdue and kill in raising crops, and at the same time obtain infinite pleasure and delight in the knowledge and culture of plants and flowers. Prof. Blanpied gives the students such a thorough and practical knowledge of chemistry that they can put their knowledge in practice on the farm in an untold number of ways.

We inspected the college farm and the buildings, and the stock on it, and found everything in fine condition under the management of Prof. Whitcher, who oversees and directs the farm, as well as gives instruction to classes in the college. He raises good crops and does good work, but your committee are of the opinion that the Legislature ought to make such appropriations and provisions as will enable the superintendent to use the farm wholly for experimental purposes; that is, the farmers of the State should have their experiments on soils, manures, crops, stock, etc., tried here, and the results published in the newspapers as soon as ascertained for the benefit of all. The average farmer cannot afford to make experiments, individually, but when they combine and act through the Legislature, they can afford it, and all are benefited at comparatively little expense to each one.

Your committee were much impressed with the prosperous condition in which they found the college in general and in its harmonious relations to Dartmouth College, for the impression has been spread abroad by some means that the relations are not harmonious, and that the Agricultural College is not prosperous, is not a success. We failed to discover any indications that the students in this department are "looked down upon" or are ill treated by the students in the older college. Any young man who shows himself worthy of respect elsewhere will receive it here. It is an important fact that every farmer and farmer's son ought to consider, that the old college is a great help, and no hindrance; the Agricultural College could not have grown faster elsewhere in the State than it has here. The use of the new library building is free to all, which is of incalculable value to the students; the philosophical apparatus, and the large and valuable collection of minerals, are also free to them to use whenever their studies demand or time permits, which advantages could not be obtained elsewhere without a vast expenditure of money.

In conclusion, we give it as our opinion that the college is in good, competent hands; that the farmers have a false impression as to the college which prevents them from sending their sons here for an education; that the Legislature ought to make liberal appropriations for the support and enlargement of the college; and that the farmers ought to send their sons here to reap the benefits which are now afforded. Do this and New Hampshire farms will double their value and productiveness in the next twenty years.

JOHN SCALES.
L. T. HAZEN.
GEORGE P. HADLEY.

HANOVER, N. H., April 21, 1886.

REPORT OF EXAMINING COMMITTEE, 1887.

To the Board of Trustees of the New Hampshire College of Agriculture and the Mechanic Arts:

In reporting to you the result of our labors we are led to remark that the opportunities offered for thorough and practical education cannot, under the circumstances, be excelled. We regret that more do not see fit to avail themselves of a chance "to come and taste and see." We are satisfied that every effort has been put forth to enable the students to obtain practical knowledge.

The examinations disclosed patient and remunerative work entered upon and completed in a cheerful and diligent manner.

We commend the institution as worthy the patronage and support of all interested to build up farming and mechanic arts, that they may stand side by side with the professions.

WARREN BROWN.
SAMUEL T. PAGE.
N. J. BACHELDER.

MECHANICAL ENGINEERING.

New Hampshire College of Agriculture
and the Mechanic Arts,
Hanover, N. H., April 16, 1887.

Hon. George W. Nesmith, *President Board of Trustees:*

Sir, — I have the honor to report as follows with regard to the progress of the course in mechanical engineering, which was commenced during the latter part of the first term.

The theoretical course now comprises instruction in descriptive geometry, mechanical drawing, sketching, machine tools, molding and foundry practice, mechanism, heat and heat engines, steam engine and boiler management, theory of steam engine, valve gears and indicator practice, machine design. In addition, there are several subjects in agricultural engineering which are taken by the students of mechanical engineering.

The practical instruction has been given in an improvised workshop, and with a very limited plant. The freshman and sophomore classes have been under instruction in this branch during the second term. The present plant consists of two portable forges, one donated by Mr. B. F. Sturtevant, of Boston, together with anvils and other appliances for instruction in blacksmithing, a number of wood-working tools for instruction in pattern-making, a screw-cutting foot-lathe — the only machine tool we possess, — and tools for vise-work. A practical blacksmith and a carpenter have been employed to supplement my instruction in the shop. This feature should be given greater prominence in the future.

A general interest has been manifested in the workshop course by the students, but that interest has been greatly tempered by the lack of accommodations. New quarters for the shop instruction are an imperative necessity. The blacksmith's plant is almost sufficient for future needs, but the rest of the equipment should be greatly increased. In addition, a small steam engine and boiler of about six (6) horse-power should be provided. This will enable thorough instruction to be given in steam-enginery.

If it is contemplated to erect a building for workshop purposes, a small crucible furnace could be included at slight extra cost, thereby providing facilities for practical instruction in the art of molding and casting in iron, brass, etc.

The shop should ultimately contain about six thousand dollars ($6,000) worth of machinery, shafting, instruments, etc., all housed in a plain but spacious building. It is very desirable that about $2,500 be available for expenditure before the next academic year.

Very respectfully,

THOS. W. KINKAID,
Asst. Engineer U. S. N.

CATALOGUE

OF THE

NEW HAMPSHIRE
COLLEGE OF AGRICULTURE AND THE MECHANIC ARTS,

1885-1887.*

At the session of the Legislature of New Hampshire in 1866, an act was passed establishing the "New Hampshire College of Agriculture and the Mechanic Arts," on the basis of the congressional land grant, and authorizing its location in Hanover, and connection with Dartmouth College.

In accordance with this act the institution was organized under a board of trustees appointed partly by the Governor and Council, and partly by the corporation of Dartmouth College, the authorized connection with Dartmouth College was effected, and the institution is now in successful operation.

The act of Congress, by virtue of which it was established, provides that its "leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

The college is carrying out the provisions of this act in the following ways:

1. It gives a practical and scientific education which is of use in all the industrial pursuits.

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* As the report previous to this was made May 1, 1885, this catalogue necessarily contains the names of all students connected with the college between May 1, 1885, and May 1, 1887.

2. It gives a thorough knowledge of the principles and sciences which enter into agriculture; and also gives courses of instruction in most of the special branches of the subject. The work has been increased recently and made more valuable, and is illustrated and supplemented by the work and series of experiments carried on upon the college farm.

3. It gives a knowledge of the principles which enter into the mechanic arts, and supplements this by giving practical instruction in the workshop.

4. It gives an extended course in chemistry, which is studied with reference to its use in the industries.

The course of study consists of a first year, divided into two terms, and ending in April, and three full college years, of three terms each.

There are also provisions for post-graduate students.

FACULTY.

Rev SAMUEL C. BARTLETT, D. D., LL. D., *President.*

BENJAMIN T. BLANPIED, A. M., *Professor of Chemistry.*

Rev. HENRY G. JESUP, A. M., *Professor of Natural History.*

CHARLES H. PETTEE, A. M., C. E., *Professor of Mathematics and Civil Engineering.*

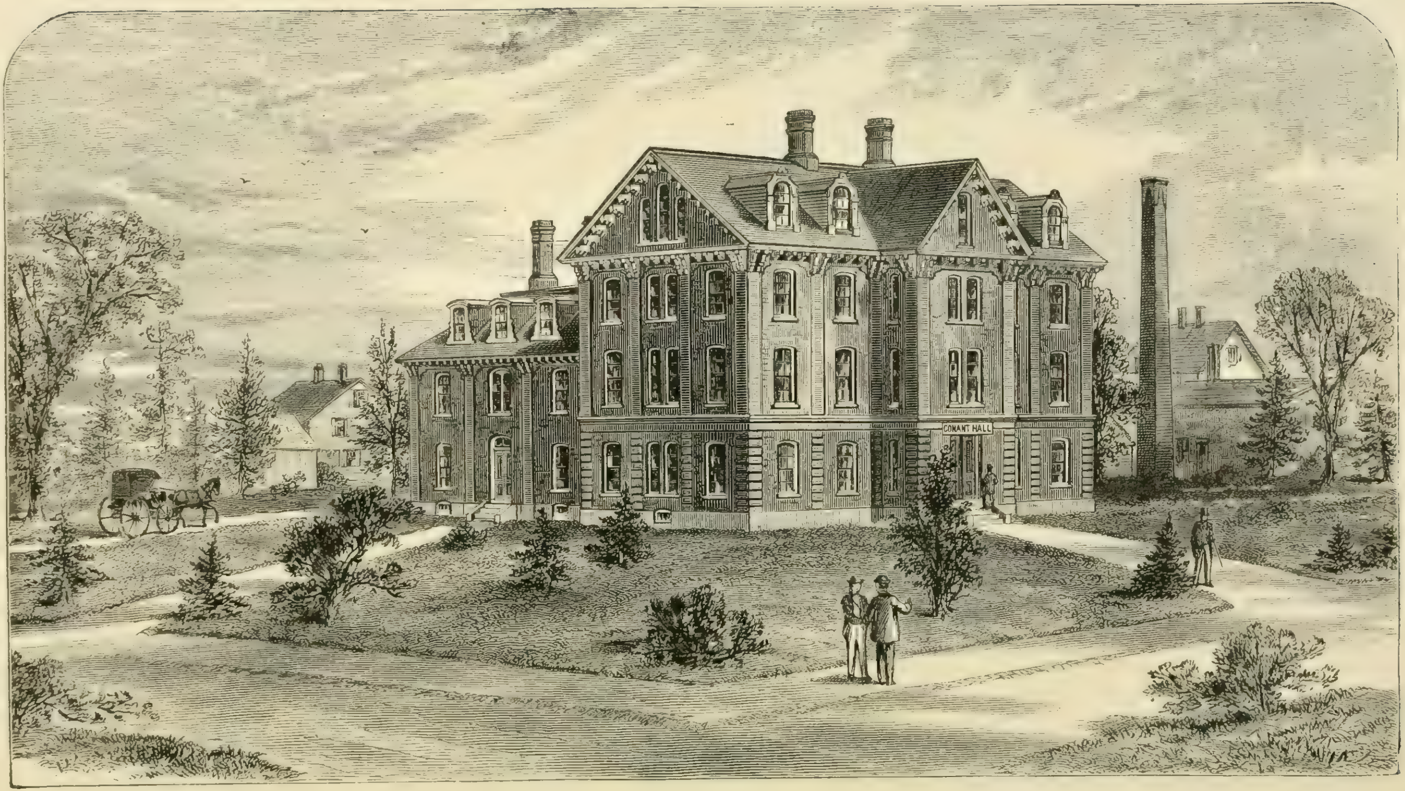
CLARENCE W. SCOTT, A. M., *Professor of the English Language and Literature.*

THOMAS W. KINKAID, Assistant Engineer, U. S. N., *Professor of Mechanical Engineering, and Instructor in Shop Work.*

GEORGE H. WHITCHER, B. S., *Professor of Agriculture, and Superintendent of the College Farm.*

ROBERT F. BURLEIGH, B. S., D. V. S., *Instructor in Veterinary Medicine and Surgery.*

SAURIN J. BLANPIED, A. M., *Instructor in Elocution.*



CONANT HALL.

STUDENTS.

Class of 1885.

Name.	Residence.	Room.
Adams, George Ellsworth,	Weston, Vt.,	A. H. 5.
Alden, Ruel Seabury,	Lyme, N. H.,	C. H. 7.
Angier, Walter Eugene,	West Swanzey, N. H.,	C. H. 5.
Bailey, Edward Alonzo,	West Swanzey, N. H.,	C. H. 5.
Bickford, Phillips Greenleaf,	Lyme, N. H.,	C. H. 1.
Brill, Andrew Walter,	Riverhead, L. I.,	A. H. 5.
Brooks, Paul Cuff,	Boston, Mass.,	Miss Richardson's.
Emerson, Frank J.,	Epping, N. H.,	C. H. 8.
Hazen, Allen,	Hartford, Vt.,	C. H. 7.
Mullins, George Mayo,	Londonderry, N. H.,	A. H. 4.
Wood, Albert Henry,	Lebanon, N. H.,	C. H. 4.

Class of 1886.

Davis, Frank Albert,	South Lee, N. H.,	C. H. 8.
Harvey, James Ellsworth,	Surry, N. H.,	C. H. 6.
Ruevsky, Belezar Stoianoff,	Sistova, Bulgaria,	C. H. 11.
Thurber, Madison Templeton,	Mast Yard, N. H.,	C. H. 10.
Wason, Edward Hills,	New Boston, N. H.,	C. H. 6.
Wood, George Pillsbury,	Lebanon, N. H.,	C. H. 4.

Senior Year, 1887.

Currier, William Sprague,	Norwich, Vt.,	C. H. 8.
Barrett, Clinton Hoyt,	Winchester, N. H.,	C. H. 2.
Hardy, Arthur Woodbury,	Hopkinton, N. H.,	C. H. D.
Sanborn, George Albert,	Rochester, N. H.,	C. H. 8.
Savage, Hiram Newton,	Hanover, N. H.,	C. H. B.
Taft, Albert Atherton,	Winchester, N. H.,	C. H. 2.
Waldron, Biron Leland,	Strafford, N. H.,	Mr. Nye's.

Junior Year, 1888.

Bickford, Fred Henry,	Hanover, N. H.,	Mr. Bickford's.
Carr, Melvin Burnside,	North Haverhill, N. H.,	C. H. 4.
Davis, Herbert Grant,	South Lee, N. H.,	A. H. 6.
Gerrish, Edwin Chandler,	Webster, N. H.,	A. H. 6.

Name.	Residence.	Room.
Fosgate, Elmer Gilman,	Winchester, N. H.,	C. H. 4.
Gillis, Linwood Carroll,	Manchester, N. H.,	Miss Abbott's.
Hazen, William Nelson,	Hartford, Vt.,	C. H. 6.
Hull, Galen Downer,	Charlestown, N. H.,	C. H. 12.
Judkins, John Huntoon,	Charlestown, N. H.,	C. H. 12.
Kibling, Charles Amory,	Hanover, N. H.,	Mr. Kibling's.
Mason, Robert William,	Hanover, N. H.,	Mrs. Gove's.
O'Gara, Edward David,	Hanover, N. H.,	Mr. O'Gara's.
Porter, George Elmer,	Hartford, Vt.,	C. H. 6.
Rood, Henry Edward,	Philadelphia, Penn.,	C. H. C.
Sargent, George Jonathan,	Canterbury, N. H.,	W. H. 22.
Smith, John Warren,	Grafton, N. H.,	C. H. 12.
Walker, George Elwin,	Littleton, N. H.,	C. H. 15.

SECOND YEAR, 1889.

Bugbee, Ernest Foster,	Hartford, Vt.,	C. H. 5.
Campbell, Louis Joseph,*	Hanover, N. H.,	Prof. Campbell's.
Chase, Fred Goodwin,*	Hanover, N. H.,	Mrs. W. W. Chase's.
Colby, Fred Harvey,	Hopkinton, N. H.,	C. H. D.
Fogg, Albert Carter,	Quechee, Vt.,	A. H. 3.
Fosgate, William Barrett,	Winchester, N. H.,	A. H. 4.
Hazen, Frank Elmer,	Hartford, Vt.,	C. H. 15.
Hoisington, Andrew Johnson,	Hartland, Vt.,	C. H. 10.
Hoyt, Milton Hood,	Brooklyn, N. Y.,	A. H. 6.
Hutchinson, Louis John,	Norwich, Vt.,	Dr. Newton's.
Johnson, Irving Jackson,	Norwich, Vt.,	Dr. Newton's.
Junkins, George Clinton,	Hanover Center, N. H.,	A. H. 4.
Leighton, Arthur Herbert,	South Acworth, N. H.,	C. H. 11.
Murdough, George Thomas,	South Acworth, N. H.,	C. H. 11.
Norris, John Lawrence,	Lyme, N. H.,	C. H. 7.
Preston, Joseph Franklin,	Hanover, N. H.,	Mr. Preston's.
Scott, Charles Walter Earl,	Winchester, N. H.,	C. H. B.
Simonds, Rufus Harvey,	Hartford, Vt.,	C. H. 10.
Stark, George Ephraim,	Lyme, N. H.,	C. H. 15.
Stone, Arthur William,	Hartford, Vt.,	Mrs. Swett's.
Stone, David Elmer,	Hartford, Vt.,	Farmhouse.
Tewksbury, Charles Henry,	Hartford, Vt.,	A. H. 3.
Tewksbury, Charles Moses,	White River Junction, Vt.,	C. H. 10.
Tracey, George Foster,	Hartford, Vt.,	C. H. 13.
Washburn, Fred,	West Springfield, N. H.,	C. H. 7.

FIRST YEAR, 1890.

Brown, Charles Patten,	Hanover, N. H.,	Mr. Brown's.
Child, Edward Leighton,	Cornish Flat, N. H.,	A. H. 3.
Eastman, Henry Chase,	Contoocook, N. H.,	C. H. 11.
Gale, Irving Hiram,	Hanover Center, N. H.,	A. H. 4.
Hardy, Edward Dana,	Hebron, N. H.,	A. H. 2.
Jewett, John Young,	Gilford, N. H.,	C. H. 15.
Kelton, Eugene Allen,	Winchester, N. H.,	C. H. 9.
Pollens, Louis, Jr.,*	Hanover, N. H.,	Prof. Pollens'.

* Partial Course.

Name.	Residence.	Room.
Richardson, Fred Herbert,	Cornish Flat, N. H.,	A. H. 2.
Robinson, William Patten,	Epping, N. H.,	A. H. 5.
Sanborn, Elihu Quimby,	Webster, N. H.,	C. H. 11.
Seaver, Alfred Luman,	Winchester, N. H.,	C. H. 9.
Slack, Clarence Ira,	Norwich, Vt.,	Mr. Slack's.
Swain, Charles Perpetual,	Olcott Falls, Vt.,	C. H. 13.
Thompson, Granville Burnham,	Lee, N. H.,	A. H. 5.

SUMMARY, 1885-1887.

Class of 1885	11
Class of 1886	6
Senior year, 1887	7
Junior year, 1888	17
Second year, 1889	25
First year, 1890	15
Total	81

ADMISSION.

Candidates for the first year must present testimonials of good moral character, and must pass an examination in Arithmetic, Algebra through simple equations, English Grammar, Geography, Physiology, and American History.

Candidates for advanced standing are also examined in the studies that have been pursued by the class which they propose to enter.

A certificate from any academy or high school will be accepted in place of an examination, upon any subject required for admission to the first or second year. Every certificate must state the amount of work done by the student, his proficiency, and the text-books used; and in case it is not evident that the student is thoroughly prepared, an examination will be required.

COURSES OF INSTRUCTION.*

CHEMISTRY.

SECOND YEAR.

1. Inorganic Chemistry, with Lectures. *Fifty-six hours.*

JUNIOR YEAR.

2. Analytical Chemistry. Qualitative Analysis. Laboratory work. *Thirty exercises (three hours each).*

ELECTIVE COURSES.

3. Organic Chemistry. Recitations and Laboratory work. *Fifty exercises.*
4. Analytical Chemistry. Qualitative Analysis. Laboratory work. *Thirty-two exercises (three hours each).*

SENIOR YEAR.

5. Analytical Chemistry. Quantitative Analysis. Laboratory work. *Sixty-three exercises (three hours each).*
6. Analytical Chemistry. Quantitative Analysis of Soils, Fertilizers, etc. Laboratory work. *Fifty exercises (three hours each).*
7. Analytical Chemistry. Quantitative Analysis. Assay of Ores. Laboratory work. *Thirty-two exercises (three hours each).*

NATURAL HISTORY.

SECOND YEAR.

1. Botany (Gray, Lessons and Manual). Field work. *Fifty exercises.*

JUNIOR YEAR.

2. Structural Botany (Thomé). *Thirty-six hours.*
3. Zoölogy (Orton). *Fifty-seven hours.*

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* For the arrangement of studies see page 41.

SENIOR YEAR.

4. Geology (Le Conte). *Fifty hours.*
5. Mineralogy. Laboratory work. *Twenty-seven exercises (two hours each).*
6. Sanitary Engineering (Philbrick). *Twenty hours.*
   Course 6 is classified here for convenience.
7. Mineralogy (Loomis). *Thirty hours.*

AGRICULTURE.

Under this head are arranged only the more technical of the studies relating to this subject. The studies which unite to form the science of Agriculture are classified under such heads as Chemistry and Natural History.

The Agriculture of the first year is prescribed; during the other years it is elective with the courses in the Mechanic Arts.

FIRST YEAR.

1. Chemistry of the Farm (Warington). *Twenty-five hours.*

SECOND YEAR.

2. American Dairying (Arnold). *Twenty hours.*
3. Forestry (Hough). *Twenty hours.*
4. Stock Breeding (Miles). Lectures. *Twenty hours.*
5. Fruit Culture (Hills). Field work. *Twenty exercises.*

JUNIOR YEAR.

6. Insects injurious to the Farm (Treat). *Twenty hours.*
7. Stock Feeding (Stewart). Lectures. *Forty hours.*
8. How Crops Grow (Johnson). *Twenty hours.*
9. How Crops Feed (Johnson). *Twenty hours.*
10. Agricultural Engineering; Roads, Streets, and Pavements (Gilmore); Principles of Framing and Bridge Construction; Farm Drainage; Metals (Bloxam). *Eighty-two hours.*

SENIOR YEAR.

11. Lectures on Veterinary Anatomy and Surgery; Gresswell's Equine Medicine. *Eighty-two hours.*
    Additional lectures on various subjects connected with Agriculture.

PHYSICS AND ASTRONOMY.

SECOND YEAR.

1. Elementary Physics (Gage). *Sixty-three hours, with twenty lectures additional.*

SENIOR YEAR.

2. Astronomy (Newcomb and Holden). *Fifty-five hours.*

MATHEMATICS.

FIRST YEAR.

1. Algebra (Quimby), Chapters I.–XI. *Sixty-five hours.*
2. Plane Geometry (Olney). *Sixty hours.*
3. Solid Geometry (Olney). *Forty-five hours.*

SECOND YEAR.

4. Algebra (Quimby). *Forty hours.*
5. Plane and Spherical Trigonometry (Olney). *Fifty-three hours.*

JUNIOR YEAR.

6. Surveying (Murray). *Twenty hours.*
7. Surveying. Field work. *Thirty exercises (four hours each).*

ELECTIVE COURSES.

SECOND YEAR.

9. Descriptive Geometry; Shades, Shadows, and Perspective; Spherical Projections (Church). Lectures. *Eighty hours.*

JUNIOR YEAR.

10. Theory of Equations. *Twenty-five hours.*
11. General Geometry and Calculus (Olney). *Eighty hours.*

MECHANICAL ENGINEERING.

FIRST YEAR.

1. Shop work; Chipping, Filing, and General Vise work; Forge work. *Thirty-three exercises (three hours each).*

SECOND YEAR.

2. Shop work; Pattern Making; Forge work; Pipe Fitting. *Fifty exercises (two hours each).*

JUNIOR YEAR.

3. Elementary Mechanics (Wood). *Fifty-seven hours.*

ELECTIVE COURSES.

SECOND YEAR.

4. Machine Tools (Smith); Lectures on Management of Boilers and Steam Machinery. *Twenty-five hours. See Descriptive Geometry.*

JUNIOR YEAR.

5. Mechanism (Stahl and Woods); Metals (Bloxam); Principles of Framing and Bridge Construction. *Eighty-two hours.*

SENIOR YEAR.

6. Shop work; General Machine work. *Thirty exercises (three hours each).*
7. Thermo-dynamics; Lectures on Engineering Subjects. *Thirty-two hours.*
8. Steam Engineering (Seaton); Mechanical Drawing; Machine Designing. *Fifty exercises.*
9. Shop work; Engine and Boiler Tests; Machine Construction. *Thirty-two exercises (three hours each).*

BOOK-KEEPING AND DRAWING.

FIRST YEAR.

1. Book-keeping (Bryant and Stratton). *Thirty hours.*
2. Free-hand Drawing (Chapman). *Thirty hours.*
3. Free-hand Drawing (Chapman). *Twenty-five hours.*

SECOND YEAR.

4. Mechanical Drawing. *Fifty hours.*

ENGLISH AND RHETORIC.

FIRST YEAR.

1. Rhetoric (Kellogg). *Forty hours.*

SECOND YEAR.

2. Rhetoric (A. S. Hill). Themes. *Fifteen hours.*
3. English Literature (Shaw). Study of Masterpieces. *Thirty hours.*
4. Rhetoric (A. S. Hill). Themes. *Twenty-five hours.*
5. English Literature (Shaw). Study of Masterpieces. *Twenty-five hours.*

JUNIOR YEAR.

6. Forensics before the College.

SENIOR YEAR.

7. Forensics before the College.

ELECTIVE COURSES.

SENIOR YEAR.

8. English Literature (Advanced Course). *Thirty hours.*
9. American Literature. *Thirty-two hours.*

FRENCH.

ELECTIVE COURSE.

JUNIOR YEAR.

1 French Grammar (Keetel). Selections from French Agricultural Writers. *Eighty-two hours.*

POLITICAL SCIENCE.

JUNIOR YEAR.

1. Laws of Business (Parsons). *Forty hours.*

SENIOR YEAR.

2. Political Economy (Perry). *Forty-five hours.*
3. Constitutional Law (Pomeroy). *Forty-five hours.*

HISTORY.

FIRST YEAR.

1. History of Greece (Smith). *Forty hours.*
2. History of Rome (Leighton). *Thirty-seven hours.*

SECOND YEAR.

3. Mediæval and Modern History (Myers). *Fifty-five hours.*

ELECTIVE COURSE.

SENIOR YEAR.

4. History of American Politics (Johnston). *Twenty hours.*

A Biblical exercise, for all the classes, is attended on Sunday afternoons.

EXAMINATIONS. — There will be an examination whenever a subject is completed, and at the end of each term. All examinations will be written, excepting those at the end of the second term, which will be oral, and in the presence of a committee appointed by the Faculty.

ORDER OF STUDIES.

This outline shows the number of exercises given to each course and the arrangement of courses.
Those elective with each other are in brackets.
For details see Courses of Instruction, p. 36.

<table>
<tr><th></th><th></th><th>FIRST TERM.</th><th>SECOND TERM.</th><th>THIRD TERM.</th></tr>
<tr><td rowspan="3">FIRST YEAR.</td><td>8.10 A. M.</td><td>Grecian History, 40; Roman History, 37.</td><td>Free Drawing, 25; Rhetoric, 40.</td><td></td></tr>
<tr><td>11.00 A. M.</td><td>Algebra, 65; Geometry, 28.</td><td>Plane and Solid Geometry, 78.</td><td></td></tr>
<tr><td>P. M.</td><td>Free Drawing, 30; Shop work, 33.</td><td>Book-keeping, 25; Chemistry of Farm, 25.</td><td></td></tr>
<tr><td rowspan="3">SECOND YEAR.</td><td>8.10 A. M.</td><td>Hill's Rhetoric, 15; Eng. Literature, 30; Modern History, 30.</td><td>Modern History, 25</td><td>{ Dairying, 20; Forestry, 20; Stock-breeding, 20; Fruit Culture, 20.
Descriptive Geometry, 80. }</td></tr>
<tr><td>11.00 A. M.</td><td>Algebra, 40; Trigonometry, 53.</td><td>Inorganic Chemistry, 56; Botany, 20.</td><td>Hill's Rhetoric, 25; English Literature, 25.</td></tr>
<tr><td>P. M.</td><td>Physics, 63.</td><td>Drawing, 50; Shop work, 50.</td><td>Botany, 32.</td></tr>
<tr><td rowspan="3">JUNIOR YEAR.</td><td>8.10 A. M.</td><td>Surveying, 20; Mechanics, 57.</td><td colspan="2">{ Entomology, 25; Stock Feeding, 40; How Crops Grow and Feed, 40.
Theory of Equations, 25; General Geometry and Calculus, 80. }</td></tr>
<tr><td>11.00 A. M.</td><td>Structural Botany, 36; Zoölogy, 57.</td><td colspan="2" rowspan="2">Laws of Business (twice a week), 40.
{ Organic and Analytical Chemistry, 82.
Agricultural Engineering, 82.
Mechanical Engineering, 82.
French, 82. }</td></tr>
<tr><td>P. M.</td><td>Surveying, 30; Analytical Chemistry, 33.</td></tr>
<tr><td rowspan="3">SENIOR YEAR.</td><td>8.10 A. M.</td><td>Geology, 50; Mineralogy, 27.</td><td colspan="2">Astronomy, 55; Sanitary Engineering, 20; Meteorology, 30.</td></tr>
<tr><td>11.00 A. M.</td><td>Constitutional Law, 45; Political Economy, 45.</td><td colspan="2" rowspan="2">{ Analytical Chemistry, 82.
History 20; English Literature, 30; American Literature, 32.
Veterinary Medicine and Surgery, 82.
Mechanical Drawing and Steam Engineering, 50; Shop work, 32. }</td></tr>
<tr><td>P. M.</td><td>{ Analytical Chemistry, 63.
Shop-work, 30; Mechanical Engineering, 34. }</td></tr>
</table>

PRIZES.

I. The Smyth Prizes. —Hon. Frederick Smyth, of Manchester, N. H., offers two prizes to the Senior and Junior classes, one of twenty and the other of ten dollars, for the best essays on subjects connected with agriculture or the mechanic arts; also three prizes, one of twenty, one of fifteen, and one of ten dollars, for excellence in oratory, open to the upper classes; also two prizes, one of fifteen and one of ten dollars, to the lower classes for reading.

II. Jesup Prizes. — Professor Jesup offers to the class in botany two prizes, amounting to twenty dollars, for the best two herbariums.

III. Alumni Prize. —The Alumni Association offers to the Senior and Junior classes a prize of twenty dollars, for the best essay upon certain political subjects selected by the association.

DEGREE.

The degree of Bachelor of Science will be conferred upon those who complete the entire course and pass the final examination. Each candidate for a degree must prepare a thesis on some subject relating to agriculture or to the mechanic arts.

BUILDINGS, APPARATUS, AND FARM.

Culver Hall. — Culver Hall is a brick building, four stories in height, and contains a large chemical laboratory, recitation and lecture rooms, and rooms for the various museums and cabinets.

Conant Hall. — Conant Hall, also of brick, contains a large boarding establishment. It is heated by steam, and has three floors devoted to rooms for students. Allen Hall also contains rooms for students.

STATE MUSEUM. — A state museum of general and applied science has been established. The specimens accruing from the state geological survey have been devoted to this institution by the Legislature. Various contributions have also been made by persons interested in this subject, and others are solicited.

CHEMICAL LABORATORY. — The chemical laboratory is commodious, well lighted and ventilated, and is furnished with appliances for instruction in general, analytical, and agricultural chemistry.

LIBRARY. — As the library of this institution is in connection with the library of Dartmouth College, students have the full use of well-stocked reading-rooms, and a library containing over sixty thousand volumes.

INSTRUMENTS AND APPARATUS. — The college is provided with approved instruments for practical surveying, and with apparatus for illustration. The students have also the benefit of the observatory, and the valuable philosophical apparatus belonging to Dartmouth College, and attend the lectures upon physics.

STATE FARM. — The farm, consisting of 360 acres of valuable land in the immediate vicinity of Culver Hall, was presented by the late Hon. John Conant, of Jaffrey. It is in a high state of cultivation, is well suited for the purposes of agricultural experiment, and is provided with new and model farm buildings. It also furnishes opportunity to the students for remunerative labor.

WORKSHOP INSTRUCTION. — The college has recently added a course in mechanical engineering. This is under the direction of one of the few officers allowed by law to be detailed from the engineering corps of the United States Navy. It makes use of workshop instruction, and gives a knowledge of the use of tools and steam machinery. The college is supplied with such articles as forges, wood and iron working tools, a lathe, etc. This supply is to be considerably increased. It is hoped that a new shop, with suitable steam power and machinery, will be provided during the coming year.

PECUNIARY AID AND EXPENSES.

Thirty-four scholarships, twelve for the State, and twenty-two for Cheshire county, will furnish the tuition for an equal number of students. These scholarships and a legislative appropriation make it possible to offer free tuition to all the students in the State.

Additional assistance, generally on room-rent, is given in certain cases. A student receiving this must give an account of his income and expenses, and must pledge himself not to use tobacco or intoxicating liquors. Monitorships, janitorships, work on the farm, etc., also furnish assistance to a considerable extent. By these means, and by teaching winters, students in a few cases pay all their expenses.

Expenses may be estimated as follows:

Tuition	Free.	$30.00
Library and reading-room tax . . .	$6.00	6.00
Room-rent, including steam heat . . .	18.00 to	30.00
Board, from $2.50* to $3.00 per week, for 37 weeks	92.50 to	111.00
	$116.50 to	$177.00

A number of students board themselves at an expense of about $1.50 per week.

The expenses of the first year are from $30 to $50 less than these estimates.

Room-rent is estimated on the supposition that two students occupy the same room.

Washing costs twenty-five cents per week. Students bring bed linen and blankets; second-hand furniture can be bought at low prices, and sold at a slight reduction.

The cost of text-books, if obtained new, is about $12 per year. As most of the students sell part of their books, the actual expense is from $3 to $6 per year.

☞ For further information, address President Bartlett, or Professor B. T. Blanpied, Hanover, N. H.

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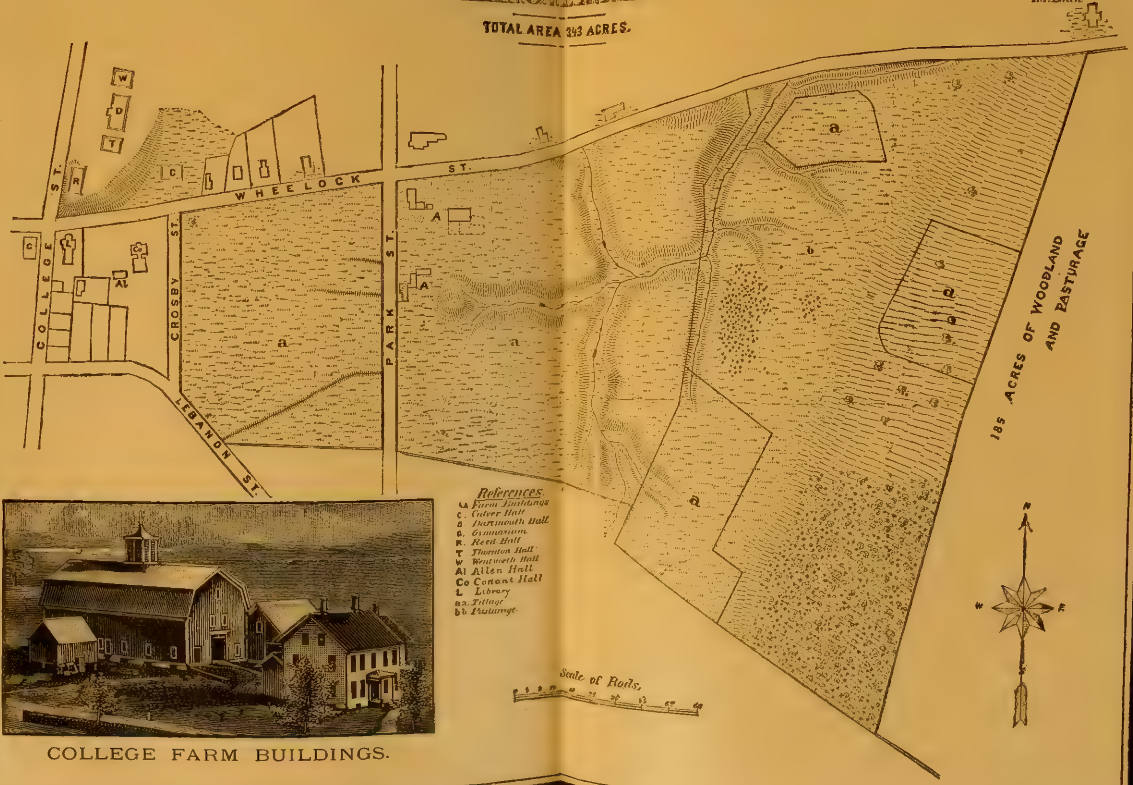
* Payable once in four weeks in advance. Pledge must be given as stated above.

AGRICULTURAL COLLEGE FARM

HANOVER. N.H.

TOTAL AREA 343 ACRES.



References.
- AA Farm Buildings
- C. Culver Hall
- D. Dartmouth Hall
- G. Gymnasium
- R. Reed Hall
- T Thornton Hall
- W Wentworth Hall
- Al Allen Hall
- Co Conant Hall
- L Library
- aa. Tillage
- bb. Pasturage

COLLEGE FARM BUILDINGS.

C.H. Sanders. Class 71. del.

ENTRANCE EXAMINATION PAPERS.

I. ENGLISH GRAMMAR.

1. What nouns form their plurals in *es*? Give rules for plurals of nouns ending in *y*?

2. Give the principal parts of *plead, lay, bid, saw, work, forbear, load, lie* (to incline), *teach, fly*.

3. Correct the following sentences: *What had I ought to do? I remember of hearing a report that you was ill. One may hear these kinds of errors most every day.*

4. Classify adverbs. Mention an adverb of each class.

5. Give the principal parts, infinitives, and participles of the verb *go;* also the third person singular in each of the moods and tenses.

6. Parse in full all the words in the following sentence: *What I gave him was not mine.*

7. Write a composition on one of the following subjects: *The Telephone. The Early History of New England. The Contrast between Spring and Summer.*

II. GEOGRAPHY.

1. Name and locate the mountains, river systems, and political divisions of South America.

2. Name the gulfs, seas, and bays, that border the coast of Asia.

3. Locate the following cities: Alexandria, Constantinople, Liverpool, Hamburg, Valparaiso, Dublin.

4. Locate the following islands: Madagascar, Cyprus, Cuba, Iceland, Borneo.

5. Name the political divisions of Europe. Give the capital of each.

6. Name the three principal political divisions of North America, and give their locations with reference to each other.

III. AMERICAN HISTORY.

1. When, where, and by whom were the early settlements made in each of the thirteen colonies which formed the United States?

2. Give a brief account of the French and Indian War.

3. Give a brief account of the Mexican War.

4. Give a brief account of each acquisition of territory made by the United States since 1800.

5. Give some account of Jackson's administration.

6. What was the Missouri Compromise?

7. What was the Emancipation Proclamation? What were the Alabama Claims?

IV. PHYSIOLOGY.

1. State the composition and structure of the bones. Name in their order those of the lower limbs.

2. What is the difference between the voluntary and the involuntary muscles? Give examples of each kind.

3. Describe the teeth, their number and kinds. Which belong to the first set?

4. Explain the process of digestion. What four solvents act upon the food?

5. What is the composition of the blood? How does the blood in the arteries differ from that in the veins?

6. How does respiration purify the blood?

7. What are the uses of the nerves, and what is the center of the nervous system?

8. Name the special senses. How can they be improved?

9. Where are the organs of touch situated? Where is this sense most acute?

10. Describe the organ of sight?

V. ARITHMETIC.

1. Define a fraction. Give the rule for the addition of fractions, and the reason for each step of the operation.

2. If 30 lbs. of cotton will make 3 pieces of muslin 42 yds. long and $\frac{5}{8}$ yd. wide, how many pounds will it take to make 50 pieces, each containing 35 yds., $1\frac{1}{8}$ yds. wide?

3. A, B, and C formed a partnership, and cleared $12,000. A put in $8,000 for 4 mos., and then added $2,000 for 6 mos.; B put in $16,000 for 3 mos., and then withdrawing half his capital, continued the remainder for 5 mos. longer; C put in $13,500 for 7 mos. How divide the profit?

4. Find the sum of $3\frac{1}{4}$, $6\frac{1}{8}$, $8\frac{2}{3}$, $65\frac{1}{6}$, reduce the fractional part to a decimal, and extract the square root of the result.

5. Find the simple, the annual, and the compound interest on $1,000 for 2 years, 5 months, and 7 days at 6 per cent.

VI. ALGEBRA.

1. Factor the following: $a^2 - b^2$; $x^4 - y^2$; $x^2 + 2x - 3$.
2. Subtract $3ax^4 - 2xy^2$ from $-5ax^3 + \frac{1}{2}xy^2$.
3. $\frac{4}{3}x - \frac{5}{7}x + 6 = 8x + \frac{4}{21}$. Solve for x.
4. $\left\{\begin{array}{l} x - 3y = 10. \\ 5x + 2y = 11. \end{array}\right.$ Solve for x and y.
5. Multiply $3ax - 5y + 3b$, by $4a - 6y$. Multiply $\sqrt{-3a}$ by $-\sqrt{3a}$.

EXAMINATION PAPERS FOR ADMISSION TO SECOND YEAR.

I. ALGEBRA.

1. Define an irrational number, an incommensurable number, a coefficient, the degree of a polynomial, the lowest common multiple of two polynomials.

2. Explain what is meant by $x^{\frac{2}{3}}$; by $x^{-\frac{1}{6}}$. Their product equals what, and why?

3. $4x^2 - 10x = 15$. Solve for x.

4. Multiply the following: $-\sqrt{a}$, $-\sqrt{-3a}$, $+\sqrt{a}$, $+\sqrt{-3a}$.

5. Find the value of $32^{\frac{1}{5}} \times 6^{0} \times 8^{-\frac{1}{3}} \times 3^{-3}$.

6. Simplify the following: $(1 + \sqrt{-1})^3$.

7. $\sqrt{4a + x} = 2(b + x)^{\frac{1}{2}} - \sqrt{x}$. Solve for x.

II. PLANE GEOMETRY.

1. Define line, angle, surface, figure.
2. What are similar figures?
3. Name the classes of quadrilaterals.
4. Prove that an angle formed by two secants or by a tangent and a secant, having its vertex without the circumference, is measured by one half the difference of the intercepted arcs.
5. What is the sum of the interior angles of a nonagon?
6. A mean proportional between two given lines is how found?

7. Prove that the angle made by two chords intersecting in a circle is measured by one half the sum of the arcs intercepted between its sides and the sides of its vertical, or opposite, angle.

8. Prove that the sum of the interior angles of a polygon is equal to twice as many right angles as the figure has sides, less four right angles.

III. SOLID GEOMETRY.

1. Define a perpendicular to a plane. Prove that a line which is perpendicular to two lines of a plane, at their intersection, is perpendicular to the plane.

2. When is a triedral rectangular? when isosceles? Prove that two triedrals having the facial angles of the one equal to the facial angles of the other, each to each, and similarly arranged, are equal.

3. Prove that a parallelopiped is divided into two equivalent triangular prisms by a plane passing through the diagonally opposite edges.

4. Prove that the volume of a triangular pyramid is equal to one third of the product of its base and altitude, and that the volume of a cone of revolution equals $\frac{1}{3} \pi R H$, R being the radius of the base, and H the altitude.

5. Prove that the surface generated by the revolution of a regular semi-polygon of an even number of sides, about the diameter of the circumscribed circle as an axis, is equivalent to the circumference of the inscribed circle multiplied by the axis. Define a zone, a lune. Give the bounding surfaces of a spherical sector.

6. A sphere whose radius is 5 is cut by a plane at 2 from the center; find the entire surface and the volume of one of the segments.

IV. GRECIAN HISTORY.

1. Give an account of society in the heroic age.

2. Describe the people, government, and characteristics of Sparta.

3. Sketch the life of each of the following: Themistocles, Demosthenes, Pericles, Socrates.

4. Give an account of the battle of Marathon.

5. What were the circumstances, causes, and results of the formation of the confederacy of Delos?

6. Describe the Attic comedy.

7. Give an account of three engagements which took place at or near Platæa.

8. Locate and, with a sentence for each, describe the following: Eubœa, Sybaris, Corcyra, Naxos, Tyre, Thrace, Corinth, Delphi, Hellespont, Lydia.

V. ROMAN HISTORY.

1. Give the history, formation, and duties of the Comitia Centuriata.
2. State the duties of each of the following: Consuls, tribunes, dictators, prætors, censors.
3. Compare the resources of Rome and Carthage B. C. 264. Name and locate the territories of each.
4. Give the history of the Third Punic War.
5. Give the history of the campaign of Marius against Jugurtha.
6. How did Rome govern Sicily? What did Verres do in Sicily?
7. Give an account of the war of Pompey against the pirates.
8. Give the causes, place, circumstances, and results of the battle between Pompey and Cæsar.
9. What were the principal events in the reign of Nero?
10. State the characteristics of the reign of Trajan, and give the Roman boundaries.
11. Give an account of Marcus Aurelius.

VI. RHETORIC.

Punctuate with care and divide into paragraphs.

1. Write a complex sentence with a prepositional phrase and an adverbial clause.
2. How are brackets used?
3. Give the facts in regard to synonyms.
4. Define tautology, verbosity, and redundancy.
5. Give examples of three grades of personification.
6. Define irony, burlesque, parody, pun, humor.
7. Write an essay of three hundred words on the following subject: The Battle of Bunker Hill.
8. Point out the faults in the following sentences and correct them:
    1. I ask him, you, and every honorable and patriotic man this question.
    2. A scientist read a paper on the catastrophe of geology at Yale College.
    3. He saw the place where Warren had fallen for the first time yesterday.

4. A house was burglarized that night.
5. An equestrian statue of Lafayette on a horse was unveiled.

VII. BOOK-KEEPING.

Journalize the following according to the principle of double entry, post the ledger and close the accounts, making use of a loss and gain account and a balance account.

Feb. 1. Commenced business with a cash capital of $5,000.00.
Feb. 2. Paid cash for books for office, $25.00.
Feb. 3. Bought for cash 100 bbls. flour at $8.00.
Feb. 5. Bought of J. R. Williams on our note at 30ds. 200 bbls. flour at $8.50.
Feb. 6. Sold for cash, 50 bbls. flour at $9.00.
Feb. 10. Sold S. E. King account 40 bbls. flour at $8.25.
Feb. 20. Sold H. Ranney on his note, 8 bbls. flour at $8.00.
Feb. 25. Received of S. E. King, cash on account, $200.00.
Feb. 28. Goods unsold, 130 bbls. flour at $7.00.

VIII. CHEMISTRY OF THE FARM.

1. Give definition of chemistry.
2. Define each of the following: element, compound, molecule, atom.
3. Name three forms of substance needed by crops.
4. Why are bones valuable as manure?
5. Show how a seed of corn gets its supply of material for growth.
6. Mention three varieties of soil; define each.
7. How should the fertilization of land for corn differ from its fertilization for clover?
8. Give some of the leading facts about the subject of stock-feeding.
9. What are albuminoids and where are they found?
10. Why does a horse at rest require less food than one at hard labor?

GRADUATING EXERCISES.

College Church, Tuesday, June 23, 1885.

MUSIC.

PRAYER.

American Competition in Foreign Food Markets	Albert H. Wood.
Agricultural Prosperity as Affected by Land Tenure	Ruel S. Alden.

MUSIC.

Adulteration of Farm Products	Phillips G. Bickford.
Seed Gardening	Andrew W. Brill.
The Relation of Scientific and Industrial Progress	Paul C. Brooks.

MUSIC.

The Social Questions of Farm Life . .	George M. Mullins.
Some Practical Results of Sanitary Engineering	Walter E. Angier.

MUSIC.

CONFERRING DEGREES.

MUSIC.

THESES PRESENTED TO THE TRUSTEES.

Pioneers of American Agriculture	George Ellsworth Adams, *Weston, Vt.*
Agricultural Prosperity as Affected by Land Tenure	Ruel Seabury Alden, *Lyme, N. H.*
Some Practical Results of Sanitary Engineering	Walter Eugene Angier, *West Swanzey, N. H.*

Egyptian Agriculture, Ancient and Modern	Edward Alonzo Bailey, *West Swanzey, N. H.*
The Adulteration of Farm Products	Phillips Greenleaf Bickford, *Lyme, N. H.*
Seed Gardening	Andrew Walter Brill, *Riverhead, L. I.*
The Relations of Scientific and Industrial Progress	Paul Cuff Brooks, *Boston, Mass.*
The Fence Question	Frank Jay Emerson, *Epping, N. H.*
The Relation of Birds to New England Agriculture	Allen Hazen, *Hartford, Vt.*
The Social Questions of Farm Life	George Mayo Mullins, *Londonderry, N. H.*
American Competition in Foreign Food Markets	Albert Henry Wood, *Lebanon, N. H.*

GRADUATING EXERCISES.

College Church, Tuesday, June 22, 1886.

MUSIC.

PRAYER.

The Practical Applications of Organic Chemistry	James E. Harvey.
Irrigation as a Factor in Civilization	Madison T. Thurbur.

MUSIC.

National Experiment Stations	Edward H. Wason.
The Influence of the Mechanical Engineer in National Development	George P. Wood.

MUSIC.

CONFERRING DEGREES.

MUSIC.

THESES PRESENTED TO THE TRUSTEES.

Co-operation in Agriculture	Frank Albert Davis, *South Lee, N. H.*
The Practical Applications of Organic Chemistry	James Ellsworth Harvey, *Surry, N. H.*
Bulgarian Agriculture	Belezar Stoianoff Ruevsky, *Sistova, Bulgaria.*
Irrigation as a Factor in Civilization	Madison Templeton Thurbur, *Webster, N. H.*
National Experiment Stations	Edward Hills Wason, *New Boston, N. H.*
The Influence of the Mechanical Engineer in National Development	George Pillsbury Wood, *Lebanon, N. H.*

PRIZE RECORD.

SMYTH PRIZES.

Given by Hon. Frederick Smyth, of Manchester, N. H.

ESSAYS.

1881.

1st. George H. Whitcher. 2d. Henry L. Barnard.

1882.

1st. Edward P. Dewey. 2d. Harry L. Boutwell.

1883.

1st. Charles W. Woodward. 2d. Elmer D. Kelley.

1884.

1st. Herbert H. Kimball. 2d. Ernest S. Comings.

1885.

1st. Albert H. Wood. 2d. George P. Wood.

1886.

1st. Arthur W. Hardy. 2d. George A. Sanborn.

ORATORY.

1881.

1st. Victor H. Stickney. 2d. George J. Boardman.

1882.

1st. Adams C. French. 2d. Frank L. Bigelow.
3d. Edwin P. Dewey.

1883.

1st. Frank L. Bigelow. 2d. Charles M. Woodward.
3d. Adams C. French.

1884.

1st. George E. Adams. 2d. { Ernest S. Comings. / Moses B. Mann.
3d. Ruel S. Alden.

1885.

1st. Paul C. Brooks. 2d. George E. Adams.
3d. Ruel S. Alden.

1886.

1st. Edward H. Wason. 2d. James E. Harvey.
3d. Arthur W. Hardy.

1887.

1st. Bion L. Waldron. 2d. Arthur W. Hardy.
3d. Melvin B. Carr.

READING.

1881.

1st. Charles M. Woodward. 2d. Frank L. Bigelow.

1882.

1st. Herbert H. Kimball. 2d. William S. Adams.

1883.

1st. Walter E. Angier. 2d. George W. Mullins.

1884.

1st. James E. Harvey. 2d. Madison T. Thurber.

1885.

1st. Galen D. Hull. 2d. Hiram N. Savage.

1886.

1st. Fred H. Colby. 2d. Arthur W. Stone.

1887.

1st. Fred H. Colby. 2d. Fred Washburn.

JESUP PRIZES.

Given by Prof. Jesup for Best Herbariums.

1879.

1st. Edward A. Mack. 2d. Artemus T. Burleigh.

1880.

1st. Harland A. Nichols. 2d. { Edwin P. Dewey.
George A. Loveland. }

1881.

1st. Adams C. French.
2d. Lewis G. Flagg.

1882.

1st. Ernest S. Comings.
James B. Wallace.
2d. Herbert N. Kimball.
George M. Moore.

1883.

1st. Andrew W. Brill.
2d. Walter E. Angier.

1884.

1st. James E. Harvey.
2d. George P. Wood.

1885.

1st. Albert A. Taft.
2d. Clinton H. Barrett.

1886.

1st. Edwin C. Gerrish.
2d. William N. Hazen.
George E. Porter.

OFFICERS OF THE ASSOCIATE ALUMNI.

PRESIDENT.

H. L. BOUTWELL, '82.

VICE-PRESIDENTS.

J. F. SMITH, '73.
G. H. WHITCHER, '81.
J. L. McGREGOR, '75.
E. P. DEWEY, '82.
E. D. KELLEY, '83.

SECRETARY AND TREASURER.

W. A. McGRATH, '81.

CORRESPONDING SECRETARY.

E. WHITTEMORE, '77.

EXECUTIVE COMMITTEE.

G. H. WHITCHER, '81.
R. F. BURLEIGH, '82.
C. H. HAZEN, '81.

COMMITTEE ON PRIZES.

J. F. SMITH, '73.
H. H. KIMBALL, '84.
H. L. BARNARD, '81.

Annual meeting, Tuesday before the last Thursday in June.

CATALOGUE OF GRADUATES.

NOTE.—The arrangement is: (*a*) Name in full. (*b*) Degrees taken. (*c*) Residence at time of entering college. (*d*) Occupation, etc. (*e*) Present residence.

1871.

William Preston Ballard, B. S., Concord. Farmer. *Concord.*

Lewis Perkins, B. S., Hampton. Civil Engineer. *North Adams, Mass.*

Charles Henry Sanders, B. S., Penacook. Architect and Merchant. *Penacook.*

3—

1872.

Edwin Bartlett, B. S., Bath. Farmer. County Treasurer, 1883. *Kinsley, Edwards Co., Kansas.*

Frank Alexander White, B. S., Bow. Farmer. *Bow.*

2—

1873.

Frederick Erasmus Eldredge, B. S., Kensington. Lawyer. *Tacoma, Wash. Ter.*

James Fred Smith, B. S., Fitzwilliam. Principal of Academy. *Fishkill-on-Hudson, N. Y.*

Charles Henry Tucker, B. S., Plaistow. Teacher. *Salisbury, Mass.*

3—

1874.

Millard Fillmore Hardy, B. S., Nelson. Graduated Theo. Inst. Ct., 1878. Clergyman. *West Boylston, Mass.*

Henry Abbott Sawyer, B. S., North Weare. Farmer and Manufacturer. Lumber business. *North Weare.*

2—

1875.

Walter Herman Aldrich, B. S., M. D. (Univ. N. Y. City, 1880), Troy. Physician. *Marlborough.*

Frank Pierce Curtis, B. S., Stoddard. Manager of Store. *Greenfield, Mass.*

Frank Veranus Emerson, B. S., Lebanon. Manufacturer. *Taftsville, Vt.*

Charles Webster Hardy, B. S., M. D., Marlborough. Physician. *Island City, Mo.*

Harvey Jewell, B. S., Winchester. Farmer. *Winchester.*

Charles Ormille Leavitt, B. S.,* Lebanon. Farmer. Died, 1877.

John Lomey McGregor, B. S., D. D. S. (Phila. Dental Coll., 1877), M. D. (1883), Whitefield. Physician. *Whitefield.*

Eliel Peck, B. S., Lebanon. Farmer and Printer, 1875–80. Merchant. *Kingston, Minn.*

Ira William Ramsay, B. S., Walpole. Farmer. *Walpole.*

Orlando Leslie Seward, B. S., Keene. Architect. *Keene.*

Emery Mason Willard, B. S., Harrisville. Drug Clerk. *15 Union St., Boston, Mass.*

11—*1

1876.

Herbert Cyril Aldrich, B. S., Troy. Insurance Agent. *Keene.*

Edmund Lawson Brigham, B. S., Jaffrey. Manufacturer. *Clinton, Mass.*

Joseph Warren Butterfield, B. S., Westmoreland. Farmer. *North Montpelier, Vt.*

Arthur Frank Chamberlain, B. S., Westmoreland. Commercial Traveler. *Chicago, Ill.*

Anson Ballard Cross, B. S., Holyoke, Mass. Workman in Wood Pulp Mill. *Readsborough, Vt.*

Warren Webster Kimball, B. S., Troy. Merchant and Postmaster. *Troy.*

Daniel Deeth Parker, B. S., Fitzwilliam. Manufacturer. *Gardner, Mass.*

7—

1877.

Rollin Kirk Adair, B. S., Ind. Ter. Farmer. *Locust Grove, Cherokee Nation, Ind. Ter.*

Homer Brooks, B. S., M. D., Franconia. Physician. *Haverhill, Mass.*

John Washington Carson, B. S., Mont Vernon. Farmer. *Mont Vernon.*

Charles Otto Chubert, B. S., Troy.

Charles Albert Edwards, B. S.,* Keene. Lawyer. Died, 1886.

William Francis Flint, B. S., Richmond. Farmer. *Winchester.*

Clinton Camillus Hall, B. S., Westmoreland. Farmer. *Westmoreland.*

John Goodrich Henry, B. S., M. D. (1880), Chesterfield. Physician. *Winchendon, Mass.*

Charles Pitkin Hollister, B. S., North Montpelier, Vt. Farmer. *North Montpelier, Vt.*

George Mirick Holman, B. S., M. D., Fitchburg, Mass. Instructor in Bryant & Stratton's Commercial College. *Boston, Mass.*

Charles Appleton Hubbard, B. S., Troy. Clerk. *Medford, Mass.*

Charles Augustus Wheeler, B. S., East Calais, Vt. Farmer. *Bracken, Corral Co., Tex.*

Everard Whittemore, B. S., Fitzwilliam. Merchant. *Marlborough, Mass.*

13—*1

1878.

Ezra Eastman Adams, B. S., Manchester. With J. A. Freeman & Co., Auctioneers. *P. O. Box 772, Philadelphia, Pa.*

Elmer Kilburn, B. S., C. E.,* Marlow. Civil Engineer. Died, 1881.

Charles Edward Record, B. S., Fitchburg, Mass. Farmer. *Fitchburg, Mass.*

3—*1

1879.

Richard Clinton Chapin, B. S., Chicopee, Mass. Civil Engineer. *Holyoke, Mass.*

Lucius M. Cragin, A. S., Lempster. Farmer. *Springfield, Vt.*

Nathaniel Cutter Holmes, B. S., Amherst. Lawyer. *Gardner, Mass.*

Fred Charles Parker, B. S., Lempster. Merchant. *Acworth.*

George Henry Wilkins, B. S., M. D., Amherst. Physician. *Palmer, Mass.*

5—

1880.

Charles Harvey Hood, B. S., Derry. Farmer. *Derry.*

1—

1881.

Edwin Thompson Aldrich, B. S., Troy. Insurance Clerk. *Keene.*
Henry Lyman Barnard, B. S., Troy. Clerk. *Claremont.*
George Jordan Boardman, B. S., Lawrence, Mass. Medical Student. *Lawrence, Mass.*
Edwin Franklin Bristol, B. S., Harwinton, Conn. Mechanic. *Ascutneyville, Vt.*
Artemas Terald Burleigh, B. S., Franklin. Farmer. *Franklin.*
Frank Dana Ely, B. S., Cavendish, Vt. Prison Official. *Windsor, Vt.*
Sanford Eugene Emery, B. S., Proctorsville, Vt. Law Student. *Cavendish, Vt.*
Charles Herbert Hazen, B. S., Hartford, Vt. Farmer. *Hartford, Vt.*
Frank Marston, B. S., Hartford, Vt. Farmer. *Hartford, Vt.*
William Augustus Megrath, B. S., M. D. (1885), Cavendish, Vt. Physician. *Loudon, N. H.*
Fred Townsend Stanton, B. S., Strafford. Farmer. *Strafford Corner.*
Victor Hugo Stickney, B. S., M. D. (1883), Tyson, Vt. Physician. *Dickinson, Dak. Ter.*
Samuel Austin Wallace, B. S., Ph. G. (Boston School of Pharmacy, 1886), West Hartford, Vt. Druggist. *Morehead, Dak. Ter.*
George Herbert Whitcher, B. S., Strafford. Professor of Agriculture and Farm Superintendent. *Hanover.*

14—

1882.

Harvey Lincoln Boutwell, B. S., LL. B. (Boston Univ., 1886), Hopkinton. Lawyer. *209 Washington St., Boston, Mass.*
Duna Justin Bugbee, B. S., North Pomfret, Vt. Teacher. *North Pomfret, Vt.*
Robert Fletcher Burleigh, B. S., D. V. S. (Am. Veterinary College, 1885), Franklin. Veterinary Surgeon and Instructor in Veterinary Science. *Hanover.*
La Forrest John Carpenter, B. S., Surry.
Edwin Preston Dewey, B. S., Hanover. Assistant Superintendent and Principal of the Schools of the Marcella St. Home. *Boston, Mass.*
George Andrew Loveland, B. S., LL. B. (Univ. of New York, 1886), Norwich, Vt. U. S. Signal Service. *New York City.*

John Wright Mason, B. S., Hanover. State Agent for Steam Cooker. *Cedar Rapids, Iowa.*

Harland Addison Nichols, B. S., Derry. U. S. Signal Service. *Fort Davis, Texas.*

Frank Elmer Thompson, B. S., Stark. Lumberman. *Ridgeway, Penn.*

9—

1883.

Elmore Ferdinand Arnold, B. S., Londonderry, Vt., M. D. (University, City New York, 1885). Physician. *Brooklyn, N. Y.*

Frank Landor Bigelow, B. S., Proctorsville, Vt. Instructor in Mathematics and Sciences, Goddard Seminary, Barre, Vt., 1883–86. With Vermont Marble Co. *Proctor, Vt.*

Frederick Stocks Birtwhistle, B. S., Troy. With Automatic Fire Alarm and Extinguisher Co. *283 Franklin St., Boston, Mass.*

Noice D. Bristol, B. S., Harwinton, Conn. Theological Student. *1060 North Halsted St., Chicago, Ill.*

Fred Plummer Comings, B. S., Lee. Teacher. *Lee.*

Frank Harry Follansbee, B. S., Canaan. Farmer. *Canaan.*

Adams Clark French, B. S., Franklin Falls. Farmer. *Rapid City, Dak. Ter.*

James Edgar Gay, B. S., Tunbridge, Vt. Principal of High School. *Manasquam, N. J.*

Elmer Daniel Kelly, B. S., Franklin Falls. Farmer. *Franklin Falls.*

Alvah Benjamin Morgan, B. S., Canaan. Drug Clerk. *Lebanon.*

William Lincoln Whittier, B. S., Deerfield. Farmer. *Deerfield.*

Charles Minot Woodward, B. S., Hanover. Instructor in Agriculture, 1883–84. Teacher. *Bryan, Tex.*

12—

1884.

Ernest Smith Comings, B. S.,* Lee. U. S. Signal Service. Died 1886.

Fred Carlos Davis, B. S., South Reading, Vt. Farmer. *South Reading, Vt.*

Sylvester Miller Foster, B. S., Riverhead, L. I. Insurance Clerk. *Riverhead, L. I.*

Herbert Harvey Kimball, B. S., Hopkinton. U. S. Signal Service. *Washington, D. C.*

Moses Bisbee Mann, B. S., Benton. Farmer. *Benton.*
Ziba Amherst Norris, B. S., Lyme. Farmer. *Lyme.*
Edwin Chapin Thompson, B. S., Lee. U. S. Signal Service. *Lake View, Oregon.*

7—*1

1885.

George Ellsworth Adams, B. S., Weston, Vt. U. S. Signal Service. *Leavenworth, Kansas.*
Ruel Seabury Alden, B. S., Lyme. Farmer. *Whitefield.*
Walter Eugene Angier, B. S., C. E. (1887), West Swanzey. Civil Engineer. *Fort Madison, Iowa.*
Edward Alonzo Bailey, B. S., West Swanzey. Attendant in Insane Asylum. *Winchendon, Mass.*
Phillips Greenleaf Bickford, B. S., Lyme. Teacher. *Farmington, Wash. Ter.*
Andrew Walter Brill, B. S., Riverhead, L. I. In Kansas Seed House. *Lawrence, Kansas.*
Paul Cuff Brooks, B. S., Boston, Mass. Student in Harvard Veterinary School. *97 Kendall St., Boston, Mass.*
Frank Jay Emerson, B. S., Epping. Clerk. *Epping, N. H.*
Allen Hazen, B. S., Hartford, Vt. Farmer. *Hartford, Vt.*
George Mayo Mullins, B. S., Londonderry. Farmer. *Londonderry.*
Albert Henry Wood, B. S., Lebanon. Farmer. *Lebanon.*

11—

1886.

Frank Albert Davis, B. S., South Lee. Farmer. *South Lee.*
James Ellsworth Harvey, B. S., Surry. Student in Chemistry, Mass. Institute of Technology. *Boston, Mass.*
Belezar Stoianoff Ruevsky, B. S., Sistova, Bulgaria. Editor of Agricultural Paper. *Sistova, Bulgaria.*
Madison Templeton Thurber, B. S., Webster. Medical Student. *Webster.*
Edward Hills Wason, B. S., New Boston. Law Student. *Nashua.*
George Pillsbury Wood, B. S., Lebanon. Farmer. *Lebanon.*

6—

CATALOGUE OF NON-GRADUATES.

NOTE. — The time of connection with the college varies from one term to three years. Present residence not being known, the former residence is given. Dates show the years of connection. Corrections solicited.

Henry Clinton Adams, 1875. *Manchester.*
William Stone Adams, 1881–83. Book-keeper. *New York city.*
Charles Hardy Bailey, M. D., 1876–78. Physician. *Gardner, Mass.*
Jerome Barker, 1869. *Dublin.*
Arthur Lewis Bartlett, 1871. *Hill.*
Charles Freeman Barus, 1878–79. *Richmond.*
Charles Joseph Batchelder, 1872–73. *Hampton.*
George Herbert Batchelder, 1872. *Hampton.*
Fred George Bliss, 1882. Farmer. *Lyme.*
Herbert Everett Brooks, 1872. *Rindge.*
William Wallace Brown, 1868. Lumberman. *Campton Village.*
Albert Carney, 1868. Hotel-keeper. *Choctaw Nation, Ind. Ter.*
George Franklin Clapp, 1876–77. Mechanic. *Worcester, Mass.*
John Dean Colony, 1872–73. *Keene.*
Richard Leeds Conner, 1872–73. Clerk. *St. Louis, Mo.*
Edgar Orin Crossman, 1881–82. Medical Student. *Burlington, Vt.*
James William Cuthbert, 1881–83. *Gilsum.*
Don Himan Darling, 1884. Farmer. *Hanover.*
Gilman Webster Davis,* 1872. *Stoddard.* Dead.
Homer Augustus Davis, 1875. Farmer. *Fitzwilliam.*
Bertran Myron Dimick, 1884. Student in Tufts College.
Joseph Edwin Everett, 1868. Printer. *Manchester.*
Lewis Gardner Flagg, 1880–81. Designer. *Boston, Mass.*
Eben Caleb Ford, 1880–81. Clerk. *Ludlow, Vt.*
Jerry Currier Fogg, 1882–84. Farmer. *Deerfield.*
Sumner Fremont Gay, 1880. Farmer. *North Charlestown.*
Alton Albion Gile, 1881–83. Drug Clerk. *Newport.*
Frank William Gould, 1883–84. Farmer. *Hanover.*

George Hall, 1879. Railroad Clerk. *Boston, Mass.*
Jesse Fisk Hall, 1883–85. Surveyor. *Antigo, Wis.*
Fred Azro Hazen,* 1878–79. *Hartford, Vt.* Died, 1879.
Chancey William Healey, 1868. Mechanic. *Swanzey.*
Horace Milton Hills, 1882. Farmer. *Plaistow.*
Harvey Monroe Holt, 1871. *Nelson.*
Horace Elijah Hurlbutt, 1883–84. Farmer. *Hanover.*
Charles Everett Huse, 1882. *Enfield.*
Fred Burton Huse, 1875–76. Farmer. *Hartford.*
Emri Clark Hutchinson, 1868. Farmer. *Milford.*
William Lord Jenkins,* 1874–75. *Fitzwilliam.* Dead.
Alfred Edward Jewett, 1874. *Rindge.*
Irwin Jewett, 1872. *Dover.*
Charles Henry Knight, 1876–77. Weaver. *Hinsdale.*
Herbert M. Lang, 1869. Carpenter and Builder. *Worcester, Mass.*
Charles Albert Loveland, 1879–81. Farmer. *East Saginaw, Mich.*
Joseph Henry Loveland, 1879–81. Farmer. *Norwich, Vt.*
William Alfred May, 1875. Farmer. *Potsdam, N. Y.*
Edward Ayr Mack,* 1878–80. *Franklin.* Died, 1880.
Levi Elmer MacPherson, 1883–84. Farmer. *Fitchburg, Mass.*
Charles David Mandeville, 1876–77. *Newark, N. J.*
Lester Everett Mason, 1872. Merchant. *Keene.*
Alfred Elmer Mathews, 1881–83. Farmer. *Norwich, Vt.*
William Ware Miller, 1881–82. Farmer. *Pomfret, Vt.*
George Milton Moore, 1881–84. Merchant. *Plymouth, Vt.*
James Alexander Moore, 1882. Tailor. *Littleton.*
Charles Edwin Mudge, 1870–72. *Kensington.*
Chester Osborne, 1883–84. *Colorado Springs, Col.*
Granville Hamblett Parks, 1881–82. *Woburn, Mass.*
Angus Oster Patton, M. D., 1880–82. Physician. *Montreal, P. Q.*
Walter Hiram Perry, 1875–76. *Swanzey.*
William Forbes Read, 1868. Mechanic. *East Swanzey.*
William Curtis Reed, 1871. *Westmoreland.*
Isaac Fitz Sawyer, 1870–72. Lawyer. *Cambridge, Mass.*
Victor Ira Spear, B. S. (1874), 1870. Farmer. *Braintree, Vt.*
Eugene Wheatley Spicer, 1875. *Randolph, Vt.*
Walter Henry Spofford, 1883–84. Wheelwright and Farmer. *South Groveland, Mass.*
Frank Dennis Stanley, B. S., (1879), 1875. Surveyor. *Frankfort, Mich.*
Louis Buchanan Thurston, 1878–79. Butter-maker. *Franklin.*
James Burns Wallace, 1881–82. Student in Dartmouth College. *Canaan.*

John Reuben Wallace, 1878–79. Farmer. *Sharon, Vt.*
Charles Lincoln Wilkins, 1879–81. Orange Planter. *Florida.*
William Grafton Wentworth, 1874. *Haydenville, Mass.*
Irwin Orley Wright, 1872–74. Station Agent. *Hampton.*
William Burns Wright, 1880–81. Book-keeper. *Lebanon.*
William Clement Whipple, 1881–82. Farmer. *Pomfret, Vt.*
Charles Albert Wilcomb, 1868. Farmer. *Chester.*
James Harris Wolfe, 1868. *Boston.*

SUMMARY.

	Living.	Dead.	Total.
Graduates	105	4	109
Non-Graduates	72	4	76
Students in attendance since last report .			81
Total connected with college, deducting those reckoned twice			249

OCCUPATIONS.

	Graduates.	Non-Graduates.	Total.
Clergyman	1		1
Lawyers	3	1	4
Physicians	9	2	11
Veterinary Surgeon	1		1
Teachers	9		9
Engineers	3	2	5
Architects	2		2
Chemist	1		1
Journalist	1		1
Manufacturers and Mechanics . .	5	4	9
Students of Law, Theology, and Medicine	6	1	7
U. S. Signal Service	5		5
Agricultural Pursuits	34	23	57
Business Pursuits	21	11	32
Miscellaneous	2	5	7
Unknown	2	23	25

FARMERS' MEETINGS.

During the winter of 1884–85, the faculty of the college formed the plan of holding agricultural meetings in various parts of the State. The meetings held were advertised by means of posters and hand-bills, and in nearly all cases were attended by the representative farmers of the sections in which they were held.

COLEBROOK, DEC. 29, 1885.

AFTERNOON.

Commercial Fertilizers	Supt. G. H. Whitcher.
Discussion.	
Work of the Agricultural College	Prof. C. H. Pettee.

EVENING.

Diseases of Domestic Animals	Dr. R. F. Burleigh.
Discussion.	
The Education for Farmers	H. A. Savage, of the Junior Class.
Stock Feeding	Supt. G. H. Whitcher.
Discussion.	

LANCASTER, DEC. 30, 1885.

AFTERNOON.

Fertilization	Supt. G. H. Whitcher.
Discussion.	
Chemistry of Fertilizers	Prof. B. T. Blanpied.
The Work of the State College	Prof. C. H. Pettee.

EVENING.

Weather Predictions	Prof. C. H. Pettee.

Diseases of Digestive Organs of Horses and Cattle	Dr. R. F. Burleigh.
Discussion.	
The Education for Farmers	Mr. H. N. Savage.

WHITEFIELD, JAN. 1, 1886.

AFTERNOON.

Introductory Remarks	L. T. Hazen, Esq.
Diseases of the Digestive Organs of Horses and Cattle	Dr. R. F. Burleigh.
Discussion.	
Predictions of the Weather	Prof. C. H. Pettee.

EVENING.

The History and Work of the College	Prof. C. W. Scott.
Analysis of Fertilizers	Prof. B. T. Blanpied.
Plant Food	Supt. G. H. Whitcher.

NORTH HAVERHILL, JAN. 2, 1886.

AFTERNOON.

Chemistry of Fertilizers	Prof. B. T. Blanpied.
Discussion.	
Weather Predictions	Prof. C. H. Pettee.
Discussion.	

EVENING.

Agricultural Education	Prof. C. W. Scott.
Diseases of Domestic Animals	Dr. R. F. Burleigh.
Discussion.	

CORNISH, JAN. 4.

AFTERNOON (AT CORNISH "CITY").

The Work of the State College	Prof. C. W. Scott.
Chemical Fertilizers	Supt. G. H. Whitcher.
Treatment of Domestic Animals	Dr. R. F. Burleigh.

EVENING (AT CORNISH FLAT).

Agricultural Education	Prof. C. W. Scott.
Diseases of Domestic Animals	Dr. R. F. Burleigh.
Chemical Fertilizers	Supt. G. H. Whitcher.
Discussion.	

ACWORTH, JAN. 5.

AFTERNOON.

Introductory Address	Prof. C. H. Pettee.
Diseases of Domestic Animals	Dr. R. F. Burleigh.
Agricultural Education	Prof. C. W. Scott.
Discussion.	

EVENING.

Chemical Fertilizers	Supt. G. H. Whitcher.
Discussion.	
Weather Predictions	Prof. C. H. Pettee.

BELMONT, JAN. 6.

AFTERNOON.

Introductory Address	Prof. C. W. Scott.
Weather Predictions	Prof. C. H. Pettee.
Stock Feeding	Supt. G. H. Whitcher.

EVENING.

Agricultural Education	Prof. C. W. Scott.
Chemical Fertilizers	Supt. G. H. Whitcher.

CANTERBURY, JAN. 7.

AFTERNOON.

Introductory Remarks	Prof. B. T. Blanpied.
Chemical Fertilizers	Supt. G. H. Whitcher.
Diseases of Digestive Organs of Horses and Cattle	Dr. R. B. Burleigh.
Discussion on the College, opened by	Mr. H. N. Savage.

EVENING.

Analysis of Fertilizers	Prof. B. T. Blanpied.
Agricultural Education	Prof. C. W. Scott.
Weather Predictions	Prof. C. H. Pettee.

WILMOT FLAT, JAN. 8.

AFTERNOON.

Diseases of Digestive Organs of Horses and Cattle	Dr. R. F. Burleigh.
Analysis of Chemical Fertilizers	Prof. B. T. Blanpied.
Discussion.	

EVENING.

History and Work of the College	Prof. C. W. Scott.
Treatment of Domestic Animals	Dr. R. F. Burleigh.

SHORT FALLS, JAN. 8.

Weather Predictions	Prof. C. H. Pettee.
Chemical Fertilizers	Supt. G. H. Whitcher.
The Work of the State College	Prof. C. H. Pettee.

MEETINGS, 1886–87.

DERRY, DEC. 28, 1886.

Analysis of Chemical Fertilizers	Prof. B. T. Blanpied.
Industrial Education	Prof. C. W. Scott.
The U. S. Signal Service	Prof. C. H. Pettee.

LOUDON, DEC. 28.

AFTERNOON.

Milk	Supt. G. H. Whitcher.
Hereditary Diseases of Animals	Dr. R. B. Burleigh.

EVENING.

Lung Diseases of Animals	Dr. R. F. Burleigh.
Chemical Fertilizers	Supt. G. H. Whitcher.

MERRIMACK, DEC. 29.

AFTERNOON.

Chemical Fertilizers	Supt. G. H. Whitcher.
Meteorology	Prof. C. H. Pettee.

EVENING.

The Work of the State College	Prof. C. H. Pettee.
Dairying	Supt. G. H. Whitcher.

GOFFSTOWN, DEC. 29.

AFTERNOON.

Lung Diseases of Animals	Dr. R. F. Burleigh.

EVENING.

Chemical Fertilizers	Prof. B. T. Blanpied.
Industrial Education	Prof. C. W. Scott.

AMHERST, DEC. 30.

AFTERNOON.

Lung Diseases of Animals	Dr. R. F. Burleigh.
Chemical Fertilizers	Supt. G. H. Whitcher.

EVENING.

Dairying	Supt. G. H. Whitcher.
The Work of the College	Prof. B. T. Blanpied.

GREENFIELD, DEC. 30.

Professors Pettee and Scott attended meeting of Pomona Grange and explained the work of the State College.

WILTON, DEC. 31.

Chemical Fertilizers	Prof. B. T. Blanpied.
Diseases of Animals	Dr. R. F. Burleigh.
The Work of the College	Prof. C. W. Scott.

BROOKLINE, DEC. 31.

AFTERNOON.

The U. S. Signal Service	Prof. C. H. Pettee.
Fertilizers	Supt. G. H. Whitcher.

EVENING.

The Work and Claims of the State College	Prof. C. H. Pettee.
Dairying	Supt. G. H. Whitcher.

HAMPTON FALLS, JAN. 4, 1887.

AFTERNOON.

Introductory Remarks	Hon. Warren Brown.
Chemical Fertilizers	Supt. G. H. Whitcher.
Discussion.	

EVENING.

Industrial Education	Prof. C. W. Scott.
Dairying	Supt. G. H. Whitcher.

EPPING, JAN. 5.

AFTERNOON.

Introductory Remarks on the College	H. B. F. Prescott.
The Chemistry of Fertilizers	Prof. B. T. Blanpied.
The Use of Fertilizers	Supt. G. H. Whitcher.

EVENING.

Industrial Education and the State College	Prof. C. W. Scott.
Dairying	Supt. G. H. Whitcher.

LEE, JAN. 5.

AFTERNOON.

Common Diseases of Animals	Dr. R. F. Burleigh.
Weather Predictions	Prof. C. H. Pettee.

EVENING.

The Work of the State College	Prof. C. H. Pettee.
Lung Diseases of Animals	Dr. R. F. Burleigh.

STRAFFORD, JAN. 6.

AFTERNOON.

U. S. Signal Service	Prof. C. H. Pettee.
Chemical Fertilizers	Supt. G. H. Whitcher.

EVENING.

The Chemistry of Fertilizers	Prof. B. T. Blanpied.
The Work of the State College	Prof. C. W. Scott.
Milk and its Production	Supt. G. H. Whitcher.

BARNSTEAD, JAN. 7.

AFTERNOON.

Introductory Remarks	H. N. Colbath, Esq.
Weather Predictions	Prof. C. H. Pettee.
Fertilizers	Supt. G. H. Whitcher.

EVENING.

Chemistry of Fertilizers	Prof. B. T. Blanpied.
Industrial Education	Prof. C. W. Scott.
Dairying	Supt. G. H. Whitcher.

PITTSFIELD, JAN. 8.

AFTERNOON.

Weather Predictions	Prof. C. H. Pettee.
Soil Fertilization	Supt. G. H. Whitcher.

EVENING.

Chemistry of Fertilizers	Prof. B. T. Blanpied.
Dairying	Supt. G. H. Whitcher.
The Work of the State College	Prof. C. W. Scott.

NORTHFIELD, JAN. 10.

AFTERNOON.

The Chemistry of Fertilizers	Prof. B. T. Blanpied.
Weather Predictions	Prof. C. H. Pettee.

EVENING.

Dairying	Prof. C. H. Pettee.
The Work of the College	Prof. C. W. Scott.

Besides holding these meetings the members of the faculty have given the following addresses during the present college year:

Supt. G. H. Whitcher — Lecture on "Milk," at East Whitefield, December 22, 1886; address on "Fertilizers," at meeting of Essex County (Mass.) Agricultural Society, Beverly, Mass., February 25, 1887; address on "Fertilizers," at meeting of Amesbury and Salisbury Agricultural Society, Amesbury, Mass., February 1, 1887; lecture on "Fertilizers" and one on "Milk," at meeting of N. H. Board of Agriculture, January 13, 1887.

Prof. C. H. Pettee — Address on the "College of Agriculture," at meeting of Board of Agriculture, Concord, Jan. 13, 1887.

Prof. C. W. Scott — Address on "Industrial Education," at Newport town fair, October, 1886.

REPORT

OF

EXPERIMENTAL WORKS

AT

AGRICULTURAL COLLEGE FARM

FOR YEARS 1885-87.

BY SUPT. G. H. WHITCHER.

INTRODUCTORY.

To Hon. G. W. Nesmith, President of the New Hampshire College of Agriculture and the Mechanic Arts:

Sir, — In accordance with the law establishing the institute of which you are president, I herewith present to the trustees, through you, my biennial report for the years ending April 20, 1886, and April 20, 1887, and knowing that there are various opinions bearing upon the relation of the college farm to the college and to the farmers of the State, I take this opportunity to express my views on the question so that you, as trustees, the Legislature, and the farmers of the State may know the general objects which I have in view, and if these objects are wrong it will be an easy matter to correct any errors in the plan now adopted.

The question which I have tried to solve during the past three years has been this, How do the farmers, the progressive, thinking farmers, want the college farm managed? Do they want it run as a money-making establishment, or do they desire it to be run as an experimental farm, or as a mere fancy model farm, a thing of beauty but useless? If run as a paying investment then the only good that could come of it will be the small sum of money which might be annually saved. If run as a model farm then quite a sum must be annually expended in keeping up a show which perhaps two hundred farmers in the State might approve of, but which could give no information to the practical farmer. If run as an experimental farm, and, if some method of thorough distribution of the results can be devised, then benefit to a majority of the farmers may result.

I am satisfied from the nature of more than five hundred letters of inquiry that the progressive farmers want the college farm run as an experimental, rather than as a model but useless farm. They do, however, desire as near an approach to the model plan as the nature of experimental work will admit, and it is no easy matter to combine the two plans.

An experimental farm means one where theories relating to agriculture are put to the test and such a farm should take the lead in trying these theories and not wait until others have proven the advantage or disadvantage of any given system. A case in point is in relation to the use of ensilage. Our college farm should have been the first in the State to thoroughly test ensilage, no matter if it proved an absolute failure, it would be better to fail here than to have hundreds of failures over the State, which careful experimental work might have prevented. Lack of funds with which to do this work, no doubt, was the cause of the delay, but it illustrates the idea of what the farm should do. An experimental farm should test theories which its manager has every reason to suppose will fail if there is a general tendency for farmers to go into that particular branch of farming or method of management, and no man can run such a farm without making experiments that prove a total failure; on a model farm, however, no failure should ever occur, hence the impossibility of making an experimental farm a model one.

I have received more than a hundred inquiries relative to matters which lack of means has prevented direct experiments on, but I have never yet had a single letter asking for the balance sheet of the farm or asking whether it pays. The farmers who think and who write for information want to know whether one kind of fertilizer is better than another, whether one kind of feed found in the market is more economical than another, selling for the same price. They want to know the best method of setting milk, managing cream, and utilizing the skim-milk. They inquire about new implements and new seeds. Now, from these questions, I think it fair to assume that the progressive farmers of the State want me, as superintendent of the college farm, to investigate matters relating to practical farming and I have pushed the experimental work to the full extent of time and means at my disposal.

If I supposed that the best farmers of the State demanded that the farm be managed with the financial standing solely in view and wished a money-making policy adopted, I should of course use every effort to meet the demand, but I have every reason to suppose that the true province of the college farm is recognized, and that experimental work rather than work planned for profit is what is wanted and demanded.

In the class room it is my aim to bring as much of the practical and every-day work to the front as is possible, and to show, so far as I am able, the relation that exists between science and practical agriculture, and the extent to which I succeed or fail, you, as trustees, must decide by investigation and observation.

The experiments herewith submitted are such, I hope, as will meet your approval.

Very respectfully,
G. H. WHITCHER,
Superintendent of the College Farm.

FINANCIAL STATEMENT.

April 1, 1887.

Bills Payable		$975.88
" Receivable		475.00
Balance (Liabilities)		$500.88
Hay and beans ready for market	$650.00	
Addition of new machinery and tools	150.00	
" silo	100.00	
" stables under barn	150.00	
" " for horses in barn	50.00	
" room in house	25.00	
	$1,125.00	
Shrinkage in invoice (live stock and produce on hand)		600.00
		$1,100.88

During the past two years there have been losses of live stock, including one valuable horse, which have amounted to $300 and all from sickness which failed to yield to the best of medical treatment and to constant care, and for which no one is in any way responsible. The horse died from a severe attack of pneumonia caused by a cold taken while securing ice.

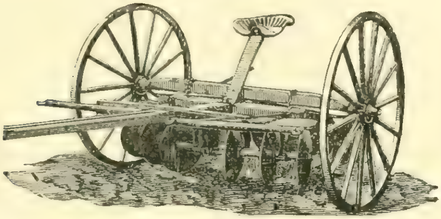
Respectfully,
G. H. WHITCHER,
Superintendent of College Farm.

MISCELLANEOUS.

METHOD OF PRESERVING SKIM-MILK FOR USE IN FEEDING.

In any farming section where there is a creamery it is a matter of no small importance to be able to make good use of the skim-milk, and to do this it must be sweet. We have seen that skim-milk contains all the constituents of milk except the fat, and its decomposition, or souring, is due to a kind of fermentation by which the milk sugar is changed into lactic acid, and this change is due to the growth of a minute organism in a similar way to the yeast fermentation by the growth of the yeast plant. It is a well-known fact that bread if overheated fails to rise, the yeast being killed, and fermenting canned fruits are saved by scalding, and in the same way the souring of skim-milk may be prevented by heating to a temperature of 140°. I have made a few laboratory tests of milk from the centrifugal separator, and heated one lot to 130°, leaving the other as it came from the creamery; the latter soured in less than ten hours, while the former did not sour in forty-eight hours. Recently I put this matter to a practical test. I found that milk taken from the separator at 10 A. M. would become slightly sour at 6 P. M., and completely soured by the next morning, and as it was desirable to have the milk at the latter time in sweet condition for young calves, I commenced heating the milk to 130°, and have had no difficulty in keeping it perfectly sweet for twenty-four hours. I have not tried to see how long it would keep, but think it would remain sweet for forty-eight hours. This is a very simple process, but it is a sure preservative. The heating must begin before any signs of acid are developed.

NEW HARROW.



A comparatively new and exceeding valuable addition to farm tools has been made by the Monadnock Agricultural Works, Keene, N. H. It is the new Hall disk harrow, a cut of which was furnished at my request. I present this to the farmers of New Hampshire because I am satisfied from nearly two years' use of one of these harrows that it is the best seed-bed preparer now on the market. Its peculiarity over other disk harrows is in its having two sets of disks, much as would be the case if two Randall or La Dow harrows were fixed to a frame, one in front of the other, the forward one convex forward and the rear one convex backward; thus the forward set turns the soil in towards the center while the rear ones turn it back, *leaving the land perfectly level*, a thing which no other disk harrow does. It is a serious objection to the single disk harrow that they ridge the land. The Hall does away with this. Of course it is a load for the horses since it does nearly twice the work of pulverizing that a single harrow does. It is a very thoroughly built harrow and is carried from field to field on the wheels shown in the cut. The wheels, however, have nothing to do with the harrow in operation, as they unhook and are taken away; they are only for transportation.

MOWING-MACHINE TRIAL.

In June the Farmers' Club ordered a mowing machine trial at the College farm, and the following is the report of the committee of the club:

HANOVER, June 3, 1886.

The undersigned, committee for the Farmers' Club, thinking it desirable to have a trial of mowing machines on the Agricultural College farm, entered into correspondence with various manufacturers and agents, hoping to secure an assurance of at least six or eight competitors. Letters were sent by the president and secretary of the club to the following manufacturers or agents: Walter A.

Wood, Champion, Buckeye, Granite State, Continental, Eureka, Leonard, Bradley. These letters were mailed thirteen days before the trial was to take place. Only a few of the parties even answered the letters. Walter A. Wood, Buckeye, and Leonard failed to respond; the general agent for the Continental wrote that he had no agent in this vicinity, and could not well be represented; the Champion agent, though but five miles distant, excused himself on the ground that business was too pressing; the general agent for the Bradley appeared in person on the morning of the day of trial and as their local agent and a new machine are but two miles distant, their failure to appear at the appointed hour must be attributed to some disinclination, either from fear of being weighed and found wanting or, more probably, because they regard such small game as the Eureka and Granite State unworthy of their notice. The Wood and Buckeye, being the leading machines in the country, have, of course, become independent and care very little whether their machines are the best in all respects or not so long as their annual sales are increasing. Farmers can afford to look around among other machines before assuming that all the merits are in either of these two leading machines. So much for machines that might have but did not come. Two machines were here, the Eureka and the Granite State, the former manufactured at Utica, N. Y., the latter at Hinsdale, N. H.

In reporting on the merits of the machines, and especially in comparing one with the other, certain difficulties arise. One cuts a wider swath than the other, one is a side cut, the other a center draft, but at the outset it was announced that the points to be considered were draft, principle of construction, workmanship, ease of handling, material used in construction, quality of work, quantity of work, adaptability to the needs and requirements of New England, and your committee find that comparison may and should be made on the following points, which are independent of width of cut, or of position of cutting parts: Workmanship, ease of handling, material used, quality of work, adaptability to New England. The other points must, from the nature of the machines, be considered from separate points of view.

1. *Workmanship.* — We find that in all its details the Granite State is a superior machine. Our reasons are that all points of wear are provided with hardened surfaces capable of being removed and duplicated at small expense. The pitman and wrist-pin are of hardened metal and can be easily exchanged when worn; at the knife-head a hardened thimble, easily and cheaply removed, adds much to the durability of that part which in most machines is first

to give out; the gearing of this machine seems well centered and drilled, giving a smooth motion; parts are well fitted; all the guards are planed so that each has a bearing surface like every other.

2. *Ease of Handling.* — Under this head is included not only the ease of lifting the cutting parts but convenience of parts for oiling, steadiness of motion, etc. The Eureka can be set in operatien quicker than the Granite State, two motions being all that are required, one to lower the cutting parts, another to throw the machine in gear. The Granite State requires several motions, one to unfasten and lower the bar, another to shift the lever for lifting the outside end of the bar, still another to change the lifting apparatus for the inside end, and another to put in gear. The oiling places in the Granite State are more compact and more easily reached by the driver in the seat. As far as steadiness of motion and smoothness of action are concerned your committee are unanimous in according to the Granite State the honor of being the most perfect machine we have ever seen, either at this trial or in our practical farm work with other machines, and we believe this excellence to be due to two factors, one, principle of construction, the other, superiority of workmanship, and from principles applicable to all kinds of machines we believe this smoothness of action is indicative of great durability.

3. *Material Used.* — The evidence, so far as inquiry and observation could draw forth any, seemed to indicate that the malleable castings of the Granite State are of very superior quality, the shoe, for example, being bent and straightened again almost as readily as wrought iron. The Eureka also appears to be made of good material, but probably has less of malleable parts.

4. *Quality of Work.* — In fairness to both machines it can be said that either will leave a good stubble, but, from the nature of the machines and from careful observation of the grass stubs left after cutting, we looked for and found the following: With the Eureka all the stubs show a standing cut, showing that the grass is first pushed forward, then cut; the result is that some blades are pushed more than others, and in consequence the stubble is uneven. The Granite State cuts a very even stubble, pushing the grass very little, and leaving the cut surface of each stub nearly level.

5. *Adaptability to New England.* — We would preface this part of our report by a few words which of course apply to other parts of the report as well: Any report of a committee must, if traced back far enough, rest upon individual judgment, and although three men may decide according to their own convictions, yet the decision may be wrong, and we feel the force of this fact when we remember that

the interests of others as well as of our farmers are at stake; but with a fair knowledge of the nature of the land, the obstacles usually met with, and the needs of the majority of farmers, we are yet to be convinced that the center cut is more desirable than the side cut. It is impossible to mow close to a fence or tree with the Eureka on account of the whiffletrees and wheel of the machine. It is difficult to get into corners, and where there are sharp ridges and quick hollows, the length of cut adopted as a standard in the Eureka makes good work difficult. The Granite State is so similar to all side-cut machines in its adaptability to rough mowing that it is useless to mention details. Among the points where strict comparison cannot be made is draft; but it cannot be disputed, we think, that the Eureka six-feet cut is as light draft as the Granite State cutting but four feet.

But one point relating to principles of construction will be considered. Our farmers are almost unanimous in their demand for tilting finger bars, because of the convenience in picking up lodged grass, or when mowing with the wind; but the standard level-cut machines insist that no machine provided with a tilting motion has yet constructed a strong joint, but that all of them have a tendency to sag at the outer end. As a committee, we are convinced that the Granite State has a strong efficient tilting apparatus which does not in the least weaken the cutter-bar joint, this tilting being effected by hinging the pole and tipping the frame of the machine as a whole, and the strength of all joints is just as great in one position as in another. The fact of the cutter-bar being in line with the axle of the machine makes such a device practicable, while in either front or rear cut machines the tilt must be made by an extra device in line with the cutter-bar.

We would sum up our report as follows:

Workmanship. — Granite State superior to any machine with which we are acquainted. Eureka about like the majority of mowers.

Ease of Handling. — Eureka can be changed from work to a condition for transportation, and *vice versa*, quicker and easier than any machine we know of. For compactness and convenience of oiling, the Granite State stands first.

Material Used. — We believe the Granite State to be made of better material, especially in its superior quality of malleable parts.

Quality of Work. — There can be no question as to the appearance of the stubble after raking. The verdict must be that the Granite State cuts a more even stubble, which is evidence of great value in judging of merit.

Principles of Construction. — These are so totally different in the two machines that it is difficult to decide, but the advantages and disadvantages are about equally divided, with a preference for the Eureka relating to draft, as we believe it to be the lightest draft in proportion to the work done of any machine in the market. The tilting of the finger-bar of the Granite State we regard as efficient, and in no way prejudicial to the durability of the machine. Both machines have a device for lifting either end of the finger-bar independently of the other, and the height of obstruction which may be passed is about the same in each.

Quantity of Work. — The Eureka is far ahead of all machines in the amount of work that it can accomplish in a given time.

Your committee would again call attention to the fact of the non-appearance of such machines as the Wood, Buckeye, Champion, Bradley, etc., and wish to express our appreciation of the effort made by both the Eureka and Granite State in appearing before our club.

Signed,

G. H. WHITCHER, *President Farmers' Club.*
ALBERT B. CHANDLER, *Secretary.*
JOHN BROWN, *Machinist.*

ORCHARD.

During the past year I have set out one hundred apple trees, a good variety of grapes, currants, gooseberries, strawberries, plums, apricots, etc., and have established the foundation for an orchard on a hillside in the pasture, which is not on clayey soil, but is stony and a light loam, and there are forty acres like this well adapted to fruit or to experimental work.

G. H. W.

SHRINKAGE OF CORN IN CRIB.

The question of the shrinkage of various farm products after storing is one of considerable importance, and a matter that affects the profits of farm transactions. I have already shown that hay, by actual tests of large quantities, shrinks from 20 to 25 per cent. Ensilage shrinks 20 per cent. Corn in the crib shrinks more than would be expected, but it must be remembered that this test was in one of the most unfavorable years for corn during the past ten years. The various lots raised with different kinds of nitrogen and with sulphate of potash were put in the crib in separate compartments, and on the 1st of May, 1887, were weighed. The following table shows the results:

Fertilizer contained in nitrogen in the form of	Amount in lbs. put in crib Oct., 1886.	Amount in lbs. May 1, 1887.	Shrinkage per cent.
Sulphate of ammonia	1,845	1,077	41.6
Nitrate of soda	1,661	960	42.2
No nitrogen, but sulphate of potash instead	2,104	1,835	41.3

MILK AND THE PRODUCTION OF BUTTER.

To the New Hampshire farmer to-day, there is no branch of his occupation that promises better returns than dairying. Beef production has become unprofitable by the competition of the cheaply raised western beef, which improved methods of shipping enable the range feeder to lay down in eastern cities at low freight rates. Report 38, Department of Agriculture, Bureau of Statistics, is devoted to the study of freight rates, and from it we may learn why the western beef, though at such a distance from the eastern cities, is nevertheless at no disadvantage on freight rates. The following rates are given as illustrative of this point:

Dressed beef, Chicago to Boston, per cwt., common cars	$0.65
“ “ Hanover to “ “	.40
Butter, Chicago to “ “	.75
“ Hanover to “ “	.40
Beans, Chicago to “ “	.35
“ Hanover to “ “	.20

So that while it would seem natural to suppose that even northern New Hampshire would be at a considerable advantage from nearness to market, yet as a fact, this seeming advantage is lost through the wonderful manipulations of the railroads. With pork the same rule holds good, and no farmer can afford to produce pork at less than 5 cents per pound, while in fact much of the time for the past ten years the price has been as low as 3 to 3½ cents. Now it does not follow that either beef or pork production in New Hampshire should be abandoned, but it does seem that as a chief factor, either must lead to failure.

Dairying with us is especially important for several reasons. 1. There is no class of agricultural products where the effect of freight is so little felt as on butter. 2. Because the price of good butter is less subject to rapid and wide variations than almost any other farm product. The following table is intended to show the force of the first factor mentioned.

TABLE SHOWING RELATION OF FREIGHTS TO VALUE OF AGRICULTURAL PRODUCTS.

Product.	Average value per cwt. in Boston.	Freight per cwt.		Per cent of value used up in transportation.	
		Hanover to Boston, carload.	Chicago to Boston.	Hanover to Boston.	Chicago to Boston.
Hay	$0.75	$0.14	....	19	....
Potatoes	.90	.16	$0.35	18	39
Rye	1.00	.09	.40	09	40
Wheat	1.33	.09	.40	07	30
Apples	1.40	.17	.40	12	28
Oats	1.55	.09	.40	06	27
Pork	6.00	.40	.60	07	10
Beef	7.00	.40	.65	06	09
Butter	25.00	.40	.75	01½	03

From this table we may gather the following facts: That whether the shipping distance is great or small, the lowest ratio between value and cost of transportation exists in the case of butter, and for this reason distance from market is relatively of small importance. The next factor is cost of production. In New Hampshire it is possible to produce all the food that is needed by milch cows. It is true that much of the grain is brought from the West and fed to cows, but there is a partial advantage in this, for in every bushel of western corn fed to eastern cattle, there is added to our soil elements of fertility taken from the prairies. But there is need of a more careful adaptation of our own crops to the requirements of the dairy cow than has yet been practised. There is an erroneous impression that grain is absolutely necessary in a complete food, but if we would reflect that cows in good pasturage produce more milk and of finer flavor than the same animals on a grain and hay ration, we should see that if it were possible to provide an exact substitute for this grass no grain would be required. Various crops have different nutritive values, and it is not only possible but profitable and entirely practicable to so combine forage crops as to produce a food entirely satisfactory as a milk-producing ration.

It has been the case that farmers believed hay and straw, corn fodder and corn the only foods to be raised in our State, but this is now known to be an error by the best dairymen, nevertheless, it is possible to find many to-day who regard herd's-grass as superior to clover, and who will add corn meal to a ration of English hay when a proper mixture of well-cured clover would answer a better purpose, but I shall again refer to this under the head of "Stock Feeding." It is enough to say here that with the silo, and a judicious variety of forage plants, the New Hampshire farmer is well equipped for the production of good butter at a profitable cost per pound.

Before coming to the practical application of modern machinery to the dairy it will be well to consider, somewhat at length, the subject of milk, its relations to dairy management, its properties, both physical and chemical, and the principles upon which its management depends. To say that milk is a white fluid of sweetish taste and peculiar odor is simply to state the most obvious characteristics which are known to all, but milk is more than a simple fluid as can be easily demonstrated.

The history of the investigation of milk is a long one, dating back to the days of alchemy, and to times before the invention of the microscope.

There is an article in an old number of the "National Live Stock Journal," which gives a very good account of the various discoveries relating to milk. A few quotations will be given.

"The affirmation of Aristotle that milk is elaborated not decomposed blood, is as sound to all appearances as any of the utterances of the philosophers of the nineteenth century," This was about 348 years before the Christian era. As early as the year 1000 A. D., Avicenna and others discovered that milk was made up of three substances, having unlike properties; these were butter, curd, and whey.

"An Italian physician and professor at Bologna and Mentus, named Bartoletus, who died in 1630, discovered in milk what is supposed to be sugar of milk." About 1750 a book was published by Dune in which were given cuts showing the appearance of milk as seen under the microscope, and it is said that these cuts are remarkably accurate.

"A treatise published in 1756 by Vrillyemor mentions the fact that sugar of milk had become an article of commerce," and in which occurs the following quotation: "There is in Switzerland a chemist named Crenzius, who has composed the salt [milk sugar] admirably, but unfortunately he will not impart his secret to any one."

The first attempt to determine the chemical constituents of milk, with accuracy, was made about 1775 by Voltelenus, and, although not correct in some particulars, was, nevertheless, in many respects remarkably accurate. The per cent of sugar in milk was first determined accurately by Schoepff in 1784, and a little later Scheele discovered lactic acid and phosphate of lime. This in a general way gives us an idea of the history of milk investigation and we may now give the results of modern research.

The first and most obvious characteristic of milk is its white color and so far as the eye is concerned we should at once say that a sample of fresh milk was a simple white liquid, but if a very thin film of milk is spread on a clean glass slide, and this is placed under a microscope having a magnifying power of 150 diameters, the milk appears entirely different. First is noticed a colorless fluid in which are seen multitudes of little spherical bodies, floating in this fluid and keeping distinct from each other; these little bodies are the so-called cream globules, also sometimes called butter globules or fat globules. This is all the microscope shows us, a colorless fluid and an innumerable multitude of minute, spherical bodies floating in the fluid. A glass tube full of milk set aside for twelve hours shows a decided difference between the upper and lower portion, with a more or less distinct line of separation between the two, and as the upper portion is cream, or the part which finally becomes butter, we might naturally expect that the cream would contain all of the fat globules, and the skim-milk none. This is not, however, true for it is impossible to make a perfect separation, but it is true that the globules in the cream are vastly increased in proportion to the amount of the colorless liquid while the reverse is true of the skim-milk.

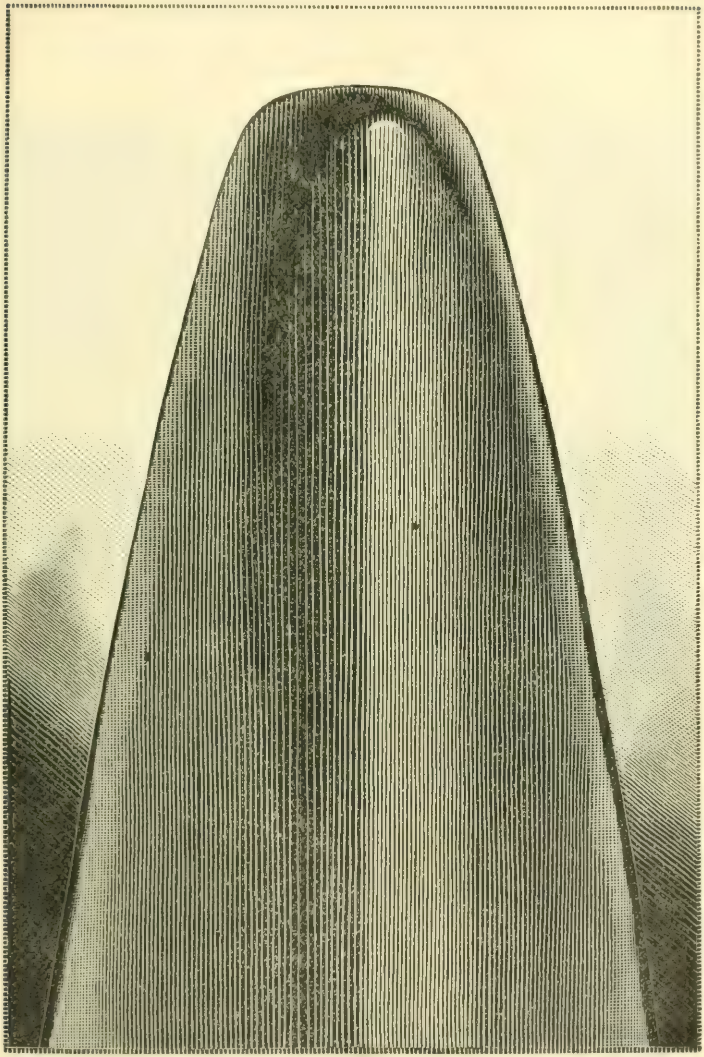
WHY THE GLOBULES OF FAT RISE.

The specific gravity of any body or substance is the weight of a given volume of the body or substance compared with an equal volume of water. If we should fill a given tube with water and find its weight to be 1000 grains and should then fill the same tube with pure milk it would weigh 1,032 grains, or if filled with skim-milk 1,037 grains, while the fat of the milk will only weigh about 950 grains.

It is evident, then, that if any fluid having a specific gravity of 1,037 is mixed with solid particles having a specific gravity of only 950 the lighter substance must rise to the surface for precisely the same reason that a cork, if liberated at the bottom of a pond of water, comes to the surface, and we may regard the skim-milk as being filled with very minute corks which are sure to come to the surface sooner or later, but the difference in specific gravity between the skim-milk and the fat is not very great, and, therefore, it requires time for these globules to rise to the surface. In examining milk with the aid of the microscope it is very difficult to get an idea of the minuteness of the fat globules. By the use of a measuring apparatus it is found that the globules vary from $\frac{1}{2000}$ to $\frac{1}{6000}$ of an inch in diameter in an average sample of milk, this being more or less affected by breed. It is however impossible to form any accurate idea of this small fraction of an inch. As a means of determining this by comparison, I have made use of photography in preparing the original cuts Nos. 1 and 2, and have drawn No. 3 on exactly the same scale, so that all three are strictly comparable.

The first step was to prepare some very minute glass tubes. A glass tube one fourth of an inch in diameter was heated in a Bunsen burner until the glass became as soft as warm wax; it was then rapidly drawn out into a fine thread of glass three feet long and about as large as a very fine thread, say No. 150, or about $\frac{1}{200}$ of an inch in diameter. This is represented in cut No. 3, B, and in the same cut C represents a short section of this same little tube magnified 750 diameters. The next process is the filling of these tubes. If one end of a piece of the glass tube is dipped in a little milk the whole will in a short time be filled by capillary attraction, but in experimenting, I have found it necessary to dilute the milk with water, say ten parts new milk and 240 of water, or with cream, ten parts of cream to 490 of water; this last is exactly the dilution used in filling the tube photographed to produce cut No. 2.

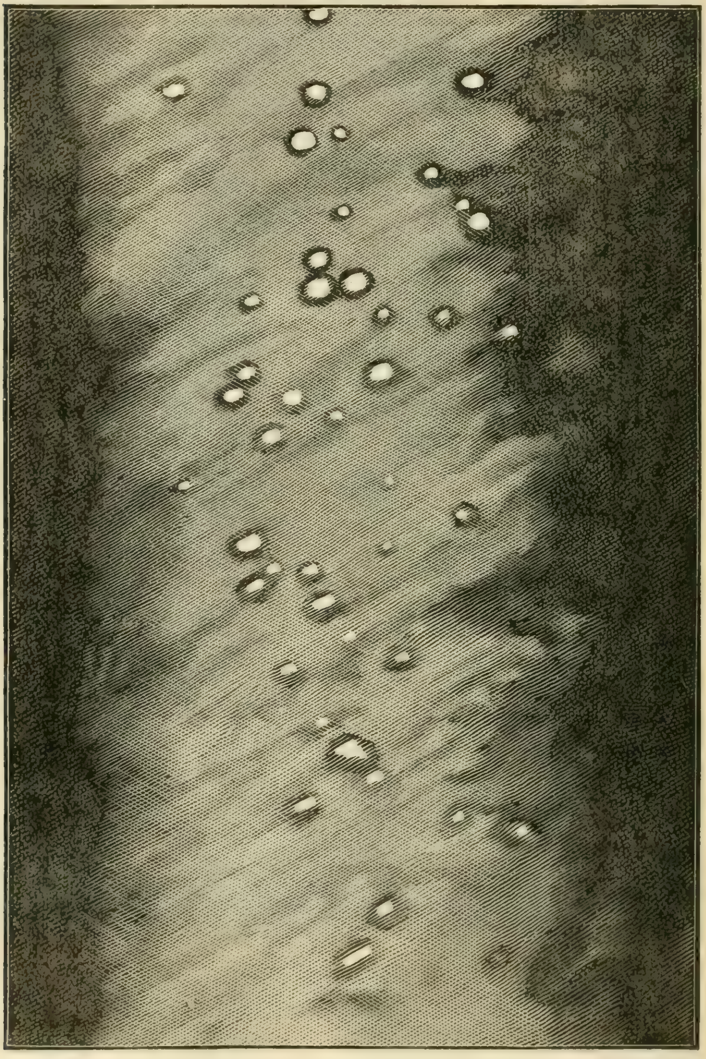
A convenient and rapid way of mounting these filled tubes for examination is to take an ordinary glass slip 1 inch by 3 inches and with a hot knife-blade draw two lines of melted beeswax across the narrow way about 1¼ inches apart, then break off pieces of the filled tube 1½ inches long and lay lengthwise of the slip so that each end comes on the line of wax, then press a warm knife on the tube, sinking it into the wax. A drop of melted wax from the the point of a heated knife-blade seals up the end of the tube, preventing any escape of milk. Several tubes containing different kinds of milk or cream may be mounted on the same slip so that there is no need of removing the object when examined. As a means of comparison, I selected a No. 8 needle and examined the point of it at the same power of the microscope as was used with the milk, and was surprised to notice that what I had regarded as a very fine point was in reality far from a true point.



No. 1.

Point of No. 8 Needle magnified 750 diameters. (Original.)

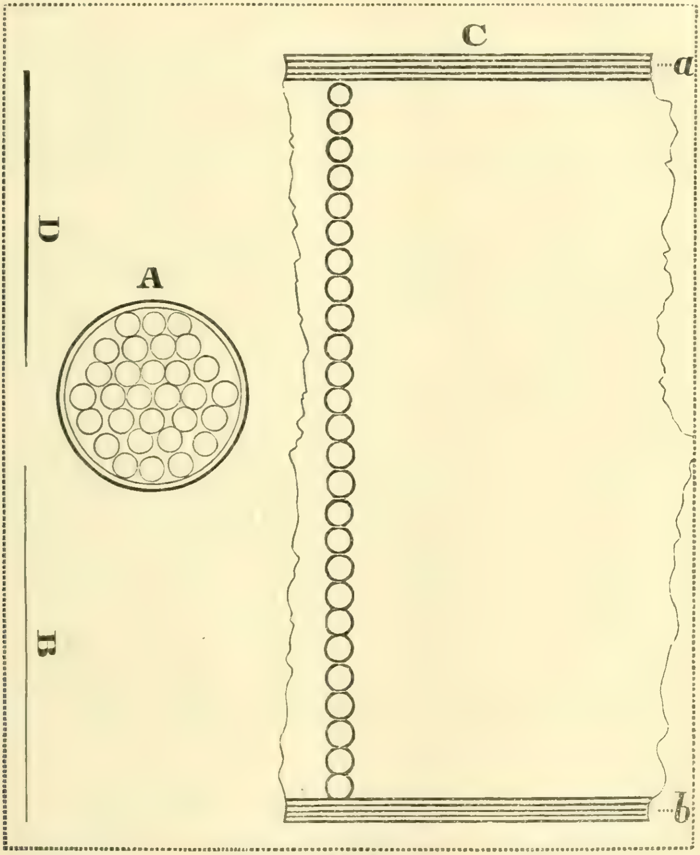
Cut No. 1 shows the point of just such a needle as photographed through the microscope, being magnified 750 times. Of course only a small portion of the tapering point is shown, for if the largest part of the needle had been shown, magnified in the same degree it would have been fifteen inches in diameter on the photograph. An ordinary lead-pencil increased in the same proportion would be fifteen feet in diameter.



No. 2.

Glass tube one two-hundredths inch in diameter, in which are globules of milk fat magnified 750 diameters. (Original.)

Cut No. 2 represents one of the tubes already spoken of filled with a mixture of ten parts cream and 490 parts water, the whole being magnified the same as No. 1; namely, 750 times. In this tube are seen the fat globules of the milk just as they appeared under the microscope, being photographed by the instantaneous process.



No. 3.

A — Point of needle magnified 750 diameters.
B — Actual size of glass tube one two-hundredths inch.
C — Same tube magnified 750 diameters, with a row of milk globules across its interior.
a to *b* — Diameter of tube.
D — Actual size of No. 8 Needle.

Cut No. 3 is drawn on exactly the same scale as 1 and 2. At A is shown the point of the needle, the circle being the boundary of the nearly level portion shown in No. 1, and the small circles inside the large one represent the size of the globules as shown in No. 2, and as both are enlarged equally the relative size is shown at once, so it will be seen that thirty fat globules as they exist in milk may actually find an abundance of room on the point of a medium-sized needle.

B is intended to show the actual size of the capillary tube used and C shows the same tube after being magnified 750 times; the row of small circles extending across C show how many globules may actually lie side by side across the internal diameter of this little tube no larger than a No. 150 thread, It will be seen that there are twenty-six of them. D is supposed to show the actual size of the No. 8 needle.

When milk is first drawn from the udder the globules are uniformly suspended throughout the whole, but from the moment it comes to rest, whether in pail, can, or pan, the globules commence their upward journey to the surface, and, other things being equal, the time occupied will be directly in proportion to the distance through which each globule has to pass. All the various processes of raising cream depend on this upward tendency of the lighter fat, and any system which fails to conform to this principle is faulty.

Shallow and deep setting, cold and variable setting, and by variable I mean setting at atmospheric temperature, are terms often met with, and as there is a vast amount of misapprehension connected with each of these terms, I will try to show that each depends upon correct principles, but that circumstances may exist which can make either superior to the other, in other words, the conditions under which any system is to be tried have more to do with the method best adapted than all other circumstances taken together. There is no especial merit in deep setting which makes it more scientific or more perfect than the shallow setting, or *vice versa*; in fact either system may be so misused that under the same conditions the other would give better results.

Remembering that the cream rises because the globules are relatively lighter than the skim-milk, it is evident that in a pan where the milk is only three inches deep the cream will rise in one half the time that it will in a pan six inches deep; and as it is true that in the ordinary method of setting at atmospheric temperature the mllk often sours before all the cream can possibly rise, it necessarily follows that in dairies where no ice or cold water is used shallow setting is best. On the other hand there are many reasons why deep setting is more convenient. Less space is occupied in the dairy-room, there is less cleaning because there are fewer cans than there would be pans for the same amount of milk, but it must be evident that deep setting at a high temperature would be a wasteful practice. There are times when milk will sour before the globules have time to rise through three inches, and it certainly must be true that the loss would be far greater if the milk was eighteen inches deep. Deep setting then invariably means cold setting, and here another principle of natural philosophy has to be considered.

It is a well-known law that various substances have the property of becoming hot or cold with different rapidity when subjected to the same conditions. For example, a rod of copper and another of iron, if of the same size and length, having each one end in the blacksmith's forge, the copper will become hot at the other end much more rapidly than the iron. This is spoken of as the power to conduct heat. Copper is a good conductor, much better than iron. On the other hand, a cube of copper and one of iron of the same size being equally heated and left in a cold atmosphere, the copper cube will cool very much faster than the iron one. This different power of conduction of heat is a principle of great importance, and many common practices are based upon it. Saw-dust is used as a covering for ice because it is a poor conductor of heat; it neither allows the external heat to get in nor the cold to get out. Wool is a very poor conductor, and hence sheep will seek an open yard when neat cattle would suffer from cold. The same is true of various liquids. Fat is a poor conductor of heat, and water a very good one. Now, in the case of milk, we have two substances having very unlike properties, one fat, the other skim-milk. Last June (1886) I determined the relative temperature of skim-milk and cream in the following way: Milk at 80° was set in iced water at 40°; five hours later I suspended one thermometer in the cream, another in the milk below the cream, and a third was held in the air just above the cream; the following are the results, the average of three determinations:

Temperature of room	60°
Temperature of cream	61°
Temperature of milk below cream	58°

In December, 1886, I still further tested the relative conducting power of cream and skim-milk as follows: Two large test tubes, one inch in diameter and ten inches tall, were filled, one with cream and the other with skim-milk; both were placed in water at 55° and remained there until of equal temperature; the water was then raised to 66°; the results were —

Water	66.0°
Cream	62.6°
Skim-milk	64.4°

The water was then raised to 86° with the following results:

Water	86.0°
Cream	82.4°
Skim-milk	84.2°

I then brought up the temperature of the water to 122° and kept it at this point until both the cream and skim-milk were at the same temperature; both tubes were then placed in water at 55°, and the temperature of cream and skim-milk read at the same time, during the time the temperature was falling.

	First reading.	Second reading.	Third reading.	Fourth reading.	Fifth reading.
Skim-milk	109.4°	95.0°	77.0°	68.0°	60.0°
Cream	116.2°	98.6°	82.4°	69.8°	61.8°

These results all show that the fat or cream is a poorer conductor of heat than the skim-milk, and consequently that at a falling temperature, that is, when milk is set at 90° in iced water at 45°, the cream will remain from two to five degrees warmer than the skim-milk. Now this difference is of prime importance in the cold setting, for it has the effect of increasing the difference in specific gravity between the globules and the skim-milk, as cream at 66°, for example, has a less specific gravity than cream at 62°. It will be seen, however, that this effect is only realized so long as the temperature is falling, for as soon as the skim-milk comes to the same temperature as the water in which it is set, it is only a very short time before the cream comes to the same temperature, but as long as there is a descending temperature the cream keeps a few degrees behind the skim-milk. This point is given special importance, because there is a very common misapprehension regarding the effect of iced setting, many supposing that it is the low temperature, rather than the descending, which hastens the separation, but, as a fact, if two samples of milk are taken at the same time, one being instantly cooled to 45° and set in water at 45°, the other being at 90° and set in an atmosphere of 90°, the latter will send up its cream in less time than the former, providing it does not sour. This is because of the fact that cream shrinks more in cooling 45° than does skim-milk, and therefore it becomes relatively more dense, which decreases the natural difference in specific gravity.

There is another method combining the two systems, — comparatively shallow pans, surrounded by cold water. With this there is the danger of too rapid cooling, the temperature of the whole becoming uniform and low before the cream is all up, but in most cases the water used with this system is not lower than 55° to 60°, and therefore the effect of too rapid cooling is not appreciable.

In adapting a system of cream-raising to any individual dairy, there are three things to be considered: First, Is ice to be used? second, Can running water at 55° be secured? and third, Must the temperature of the air in the milk-room regulate the raising of the cream?

It is needless to say that farmers ought to provide an ice-house and fill it, for it is a cheap luxury which all may and should have, but it is useless to expect that a majority even of New Hampshire farmers will provide this easily secured luxury, and for this reason it is just as necessary to study the conditions best suited to each of the three classes of dairies.

DAIRIES WHERE NEITHER ICE NOR RUNNING WATER ARE USED.

I do not believe there is any method better adapted to this class than the old-fashioned shallow "ten-quart pan." The milk in these is not over two and one half to three and one half inches deep, and therefore the globules have but a comparatively short space to rise, and under reasonable conditions of ventilation and atmospheric condition there ought to be very few cases of souring before the cream is up. A well-cemented cellar-bottom and walls kept well white-washed, or an above-ground dairy-room on the north side of the farmhouse, will answer all the requirements for first-class butter-making, if only care and skill preside over the operations from milk-pail to butter-print; and without care and skill no amount of costly apparatus or modern conveniences can produce a pound of fancy butter.

The second class includes

DAIRIES WHERE COLD RUNNING WATER IS USED.

There is a diversity of opinion respecting the method of setting best adapted to this class, and part of this is due to the fact that running water does not necessarily mean cold water. A comparatively shallow pan, presenting a fair amount of surface but not too great depth, is certainly well calculated to give good results. A depth of eight or ten inches I should regard as about right, such pans to be set in a trough-like frame, the circulation of water being kept up constantly by an inflow and outlet pipe. Under these conditions it is probable that the water will keep the milk from souring until the globules have time to rise.

The third class takes in all dairies

WHERE ICE IS USED,

And it is in this class that we find a vast number of patent "cabinets," "creamers," "cans," etc., all being "best," and it is just here that I wish to call the attention of dairymen to the fact that all are in principle alike. There may be a great variety in detail, with automatic devices, and ingeniously constructed parts, but all are in principle precisely like the old Swiss iced setting. The milk is placed in a deep, narrow can surrounded by cold water or ice, and upon the principle already mentioned — the difference in specific gravity between the cream and skim-milk — is increased so that the cream comes to the surface much faster than in ordinary setting. And I wish to say still further that a good carpenter and a tinsmith can produce a zinc-lined box and cans eighteen inches high and eight inches in diameter that are just as good as any patent apparatus on the market, and at a less cost. There is no need of buying highly praised, fancy-painted refrigerators with complicated cans, unless a farmer has money enough and wishes to do so. No patent device ever yet added to the amount of fat in milk, and in my opinion, substantiated by various analyses of skim-milk, there are none of the deep-setting patented cans that will take out the milk-fat more thoroughly than the home-made, simple can set in a home-made water box, with ice to keep the temperature at 45° or lower.

We will suppose a farmer to have a dairy of six cows, giving an average of 4,000 pounds of milk or 2,000 quarts each, annually. This would require can room amounting to 33 quarts per day; and cans eighteen inches deep and eight inches in diameter will contain not far from 17 quarts, so that two of these would hold a day's yield, and four would give an abundance of can capacity, allowing forty-eight hours in which to secure the cream. These cans can be made by a tinsmith at a cost of $1.00 each; a box large enough to contain these four cans and a sufficient quantity of ice can be built and zinc-lined for $4.00, making the whole outfit only $8.00. Now if you look in any manufacturer's catalogue and notice the price of a six-cow creamer it will probably be about $25, for in a price-list which is at hand the price of a four-can apparatus is given as $32, with a probable discount of twenty-five per cent. Here is a margin worth considering by those who wish to equip a dairy at small cost.

There are so many circumstances that affect the arrangement of the dairy-room that I will not attempt to lay down rules, but will only say that perfect ventilation, non-conducting walls, and easily cleaned floor and shelves are desirable and necessary for success. Where cellars are used there ought always to be a cement bottom, and as the process of cementing a cellar-bottom is comparatively simple, I will give it for the benefit of any who may like to improve their dairy-room.

The two things necessary are good Rosendale cement and sharp sand, or, better still, gravel averaging as large as peas. These two materials are almost always easily got. For tools, an old pail or a coalhod, a tight mortar-bin, and a leveling-trowel are all that are necessary. The only preparation that is necessary is to secure a level and hard bottom. In clayey soil, or soil having a hardpan, it is only necessary to scrape the bottom smooth, but where there is sand or gravel it is sometimes necessary to cover with flat stone, or to mix clay with the surface sand; but these cases are not common.

When everything is in readiness put two shovelfuls of sand, or gravel, in the bin, and two of cement; mix thoroughly before wetting, then add sufficient water to make a very thin mortar, so thin that it will readily run from a pail or hod, and if poured down will spread of itself. Commencing at one side of the cellar, have a board one inch thick on which to stand and level the cement. Lay the board fifteen inches from the side and pour the thin mixture into this space, leveling it as nearly one inch thick as possible, and continue the operation until the strip is finished. Move the board fifteen inches more and repeat the operation, keeping one man mixing and another spreading, for the cement sets rapidly, and if the edges become too dry before another strip is started there is danger of a bad joint. There is no need of having a mason, if some man on the farm is reasonably apt at various mechanical operations, for the work is not difficult to perform in a satisfactory manner.

I will give the cost of cementing a silo-bottom which I did last year, the size being 15 x 15½:

One and a half casks cement	$3.00
Drawing sand	.50
Labor	2.50
Total	$6.00

If a thicker body was desired the only additional cost would be for cement and sand.

Returning now to the subject of setting milk we may recapitulate by saying that deep-setting means a temperature of 45°, shallow, setting is best at from 60° to 70°, and with either good butter can be and is constantly being made.

Thus far I have only spoken of the physical properties of milk. I will now enter into a somewhat detailed account of its

CHEMICAL PROPERTIES.

It has already been mentioned that the various constituents were discovered at different times. At the present time the process of milk analysis consists in separating it into five parts, — water, fat, sugar, caseine, and ash. A sample is taken to the laboratory and, after being thoroughly mixed by shaking, a small quantity, say ten grammes, is weighed out in an evaporating dish, the weight of which has been determined; this is then placed in a steam-bath and dried for from six to ten hours, or until it ceases to lose weight. The loss represents the amount of water which the pure milk naturally contains. The dry substance in the dish is then broken up into fragments and put into a suitable apparatus and extracted with hot ether, which has the property of dissolving *fat* but not any other substance in the milk. The ether fat solution is dried and weighed. This gives the fat in the milk. What is left after the ether extraction is extracted with diluted hot alcohol, which takes out the sugar and soluble ash, leaving only the caseine and part of the ash behind. The sugar is weighed and burned, the ash then being weighed and deducted, which gives the total sugar. The caseine is also weighed, burned, and the ash deducted, and last, the two portions of ash are added together.

The following is given as the average analysis of cows' milk:

COMPOSITION OF MILK.

Water,	87.0	Data of first determination	. .	1779
Fat,	3.5	" " "	about	100
Sugar,	4.5	" " "	"	1600
Caseine,	4.4	" " "	"	1000
Ash,	.6	" " "	"	1779

There are great variations in the analyses of milk from different sources; thus we may find among the butter breeds milk containing 6 per cent more of fat, and the per cent of water may vary from 82 to 90, but as a general analysis the above will give a correct idea of the composition of this universal food.

With the exception of the fat all the constituents of milk are in solution, being dissolved in the 87 per cent of water, but the fat, as has already been pointed out, exists in minute globules suspended in the skim-milk, just as clay or fine loam may be held in water, with this difference, however, the clay being *heavier* than water gradually *sinks* to the bottom, but the fat in milk being *lighter rises* to the surface. To the butter-maker, the fat of the milk is the important part; to the cheese-maker the caseine is especially to be looked at; to the manufacturer of "lac-sugar," "infant food," etc., the sugar is of prime importance. It is therefore a matter of some importance whether the finished product is to be butter, cheese, or milk-sugar, although in the latter case the waste whey from the cheese factory is thus far the only product of milk used in its production.

During the past year I have, during spare time, analyzed samples of new milk, skim-milk, and cream with a view to determining the various constituents in each.

The following table shows the number of pounds of each constituent in one thousand pounds of milk, and also in the cream and skim-milk which this would be divided into by the mechanical separator used at the creamery. I determined exactly the per cent of cream at the time the samples were taken.

1000 Pounds of Milk contain		220 Pounds of Cream contain		780 Pounds Skim-milk contain	
	lbs.		lbs.		lbs.
Water	863.0	Water	169.40	Water	694.20
Fat	31.0	Fat	30.63	Fat	.37
Sugar	44.9	Sugar	8.36	Sugar	36.50
Caseine	54.4	Caseine	11.30	Caseine	42.90
Ash	7.0	Ash	.90	Ash	6.00
	1,000.3		220.59		779.97

This table is computed from single analyses and does not in every case prove absolutely accurate, but it is so nearly correct that it may be called fairly reliable. It shows us how the various parts are distributed in the cream and milk.

In the case under our consideration the cream amounted to 22 per cent of the whole as it was run from the separators. By the table it will be seen that

19.6 per cent of Water in the new milk appears in the cream.
98.8 " Fat " " " " "
18.6 " Sugar " " " " "
20.7 " Caseine " " " " "
13.0 " Ash " " " " "

TABLE

Showing how plant-food is distributed in products of milk in butter-making.

Kind of Plant-food.	1,000 lbs. Milk.		840 lbs. Skim-milk.		160 lbs. Cream.		126 lbs. Buttermilk.		34 lbs. Butter.	
	Weight, lbs.	Value.	Weight, lbs.	Value.	Weight, lbs.	Value.	Weight, lbs.	Value.	Weight, lbs.	Value.
Nitrogen	6.01	$1.26	5.16	$1.08	.85	$0.180	.80	$0.170	·046	$0.010
Phosphoric acid	2.25	.20	2.11	.19	.13	·010	.11	.008	.027	.002
Potash	1.27	.08	1.19	.07	.09	.005	.07	.004	.017	.001
Total	9.53	1.54	8.46	1.34	1.07	.195	.98	.182	.090	.013
Per cent of total value in each		100		87		13		12.1		.9

The table on page 102 is from a report containing Prof. Alvord's lecture on milk and is of especial importance when considered from the fertilizer standpoint, as it points to a very important matter, soil-exhaustion, and indicates a remedy for the wasteful system of cropping so common in American agriculture.

It must be remembered that this table is not based upon the same analyses as that on page 101, hence certain differences; and as we are only interested in the amount of nitrogen, phosphoric acid, and potash, I have abridged the table somewhat.

From this table we can see that 1,000 pounds of milk take from the food of the cow, and therefore from the soil of pasture or field, $1.54 in value of the elements of fertility; and if the milk is sold, this is gone from the soil just as much as if a portion of the land, containing 6 pounds of nitrogen, 2¼ of phosphoric acid, and 1¼ of potash, had been sold. But if this milk is taken to a creamery or is manufactured into butter on the farm, and the skim-milk and buttermilk carefully saved and fed to calves or pigs, there is no loss, except the small amount contained in the 34 pounds of butter, which amount is worth 1⅓ cents, and 99.1 per cent of the original $1.54 is saved. Let us apply these figures to a dairy of ten cows, producing annually 4,000 pounds of milk, or in the aggregate 40,000 pounds. If the milk was sold, there would be taken away:

Nitrogen	240 lbs.,	valued at	$50.40
Phosphoric acid . . .	90 "	"	8.00
Potash	51 "	"	3.20
Total	381 "	"	$61.60

But if only the butter from these same cows was sold, the fertility removed would be:

Nitrogen	1.84 lbs.,	valued at	$0.40
Phosphoric acid . . .	1.08 "	"	.08
Potash	.68 "	"	.04
Total	3.60 "	"	$0.52

This is a sufficient difference in the rate of exhaustion to demand serious consideration, and should be carefully considered by farmers who are selling milk, as well as by those who produce butter.

Let us examine the latest statistics with reference to the annual milk production in the United States. The latest government statistics place the number of cows in the country at 14,235,000, valued at $27.40 each; and from estimated averages, these are credited with producing, in round numbers, 5,600,000,000 gallons of milk, a yearly average of 1,573½ quarts, or 3,352 pounds, per cow. This enormous quantity of over five and one half billion gallons would contain the following ash constituents, which must come from the soil:

Nitrogen	285,600,000 lbs.
Phosphoric acid	107,100,000 "
Potash	59,500,000 "

Valued at $73,304,000.

To supply this amount of plant-food would require:

714,000	tons of	sulphate of ammonia,	costing	$49,980,000
446,250	"	bone-meal,	"	11,156,250
59,500	"	muriate of potash,	"	2,380,000
		Total wholesale cost		$63,516,250

When dealing with numbers of the magnitude of these we get very little idea of their meaning, just as the size of the milk globule deceives us in the opposite direction. Five and one half billion gallons of milk is a vast amount, and as an aid in forming some estimate of the amount I have computed the size of a tank capable of holding this year's stock of milk, and find it to be five feet deep, covering 3,650 acres, or the daily product would fill a tank five feet deep, covering ten acres.

COST OF PRODUCING A QUART OF MILK.

This is a question often asked, but seldom answered, and from the very nature of the question it is impossible to give any exact figures; that is, two men may each have a cow producing equal quantities of milk, and they may feed the same quantity of hay and grain, but may figure the cost of the milk differently; one may charge the whole market value of the hay and corn, and the other only the cost of producing each. This will make a great difference. One man will value the manure higher than the other, or perhaps one may take no account of the manure at all. But the more insurmountable difficulty is the great difference in the milk-producing capacity of various breeds and individual cows of the same breed. There are cows that require double the food per quart of milk that others in the same stable do, and so with all these elements of uncertainty it is almost useless to try to say what a quart of milk should cost.

With hay at $16 per ton, corn meal at $22, and cotton-seed at $25, it will cost not far from 25 cents per day to keep a cow; and if she produces only 1,573 quarts per year, or is an average cow, this milk will cost about 5 cents per quart, allowing for the lessened cost of feeding when not in milk; but with cows producing an average of 10 quarts per day, the cost would be less than 2½ cents. It is considered by the Massachusetts milk-producers that an average of 2,400 quarts per cow per year is evidence of good animals, good food, and good care; and if we call the cost of feeding such cows 25 cents per day for the whole year, this will bring the cost at 3½ cents per quart. At the Massachusetts Agricultural College Dr. Goessman found the cost per quart to vary from 1.1 cents to 2 cents with one cow, while another at the same time produces it at a cost varying from .8 of one cent to 2 cents. In our own State Mr. Philbrick, of Tilton, has estimated the cost, with a liberal use of ensilage, to be from 1½ to 2½ cents.

In the feeding experiment recorded in another part of this report I give the figures which show the cost of hay, corn fodder, corn meal, and cotton-seed, the averages being 2¼ cents per quart. In all these cases the cost given represents simply the cost of the food consumed, or the market value of the same, as the case may be, and no account is made of the manure or the cost of feeding, milking, etc., and at best the figures are but poor guides because of the many circumstances which affect the results. As will be seen in another part of this report, it seems possible, with good milk breeds and with cheaply raised and stored ensilage, to produce milk at a cost of 1¼ cents per quart, but it is safe to say that very little milk in New Hampshire is produced at less than 2 to 2½ cents.

After the milk is produced it becomes a question of great importance to convert it into money, which, after all, is the chief object in farming, as in other business. There are advantages in milk-selling, and to those who have a route in some manufacturing village or city it is the most natural and probably the most profitable way to dispose of the product. Then the milk-car, along the line of railroads, takes up all the milk within a six-mile belt of which the railroad is the center line; but after villages, cities, and milk-cars are supplied, there remains a large territory especially adapted to dairying because of cheapness of land and pasturing, and it is vastly more important to suggest ways of aiding this class of farmers than to investigate methods adapted to those who from location and railroad facilities are placed at an advantage which the back farmers must overcome. I know it is more popular to write up an elaborate plan of procedure adapted to men within sight of some large city to construct model dairy-rooms, model barns, all of which are beyond the reach of the average farmer, but it is much better to try, at least, to reach that by no means small class of farmers who find no immediate market for their products and who are forced to fight with a hard, stubborn soil, and who find but few really cash crops or products; in fact, just the class who at one time were at an advantage because of the profit on wool production, an industry now at a low ebb. Again, the census returns give us a few ideas which should not be lost sight of. Of the 5,600,000,000 gallons of milk estimated to have been produced in 1886, about three fifths were made into butter and cheese, — of the former 1,000,000,000 pounds, of the latter 370,000,000 pounds. These figures show that over one half of the total milk was manufactured into butter. Estimated returns in 1879 showed that only 3½ per cent of the total butter was made in creameries, the remainder, 96½ per cent, being produced on farms. It is probable, however, that the per cent made in creameries is increasing yearly, but probably not over 5 per cent is so made at the present time.

ADVANTAGES OF CREAMERIES.

A few of the advantages of the creamery system over private dairying are, first, a better price for the butter. If the reports from any market are compared week after week, it will be observed that first-class creamery butter leads first-class dairy butter by from 2 to 7 cents per pound; and when we consider that comparatively little creamery butter is below "extra firsts," while more than half the dairy butter as it runs is as low as "extra seconds," the following quotations from the official report of the Boston Chamber of Commerce will give an idea of the difference in price.

Month and day. 1886.	Grade.	Creamery price.	Dairy price.
Sept. 9.	Extra first.	22 cts.	18 cts.
9.	Extra second.	16 cts.	13 cts.
Nov. 11.	Extra first.	26 cts.	23 cts.
11.	Extra second.	17 cts.	14 cts.
Dec. 2.	Extra first.	27 cts.	23 cts.
2.	Extra second.	17 cts.	14 cts.

It is safe to say that the average selling price of all creamery butter is six cents above that of all dairy butter. This is one of the great advantages. But there is another. The same amount of milk will produce more butter in a creamery than in private dairies, for the reason that there is always a loss on every churning of butter, and a hundred pounds churned at one time will lose much less than a hundred pounds churned in ten lots of ten pounds each. Perhaps the greatest advantage of all is the decreased labor in the house. Every farmer's wife knows without being told that it brings a lot of hard work into the house to make butter, and in most cases no objection would be offered to any system which brought in the same amount of money and took away all the drudgery necessarily connected with butter-making. But there are many localities where farmers are few and the distance from neighborhood to neighborhood considerable that cannot support a creamery, and to such it becomes a matter of necessity that private dairying be conducted in a skillful manner, for as creameries are built the demand for good butter increases rapidly, while poor butter, or that which is medium in quality even, becomes a drug on the market.

There are those who believe that the production of fancy butter depends upon fancy breeds of cows, but that this does not necessarily follow will be acknowledged when it is known that the celebrated Darlington butter is manufactured from the milk of ordinary native cows, well selected, of course, and, above all, well fed. In private dairying a few things are absolutely necessary; a clean, well-aired milk-room is one. Running water and ice are great aids and can be made to compensate for lack of skill in certain ways, but an impure milk-room will baffle skill, ice, running water, good food, and registered cows. Thoroughly cleansed and bright utensils are necessary. A musty churn never yet failed to impart a musty flavor to butter churned in it, while the fermentation induced by imperfectly cleansed pans, cans, or pails has never added to the quality of the butter. Skill is needed; and it is precisely in butter-making as in mechanical work, some are born with mechanical ability, while others could no more become skilled master mechanics than could every man in New Hampshire become a Daniel Webster; and in dairying there are men and women who have a natural aptitude for butter-making, which a little experience and education will develop wonderfully, while others with all the experience possible could never become successful.

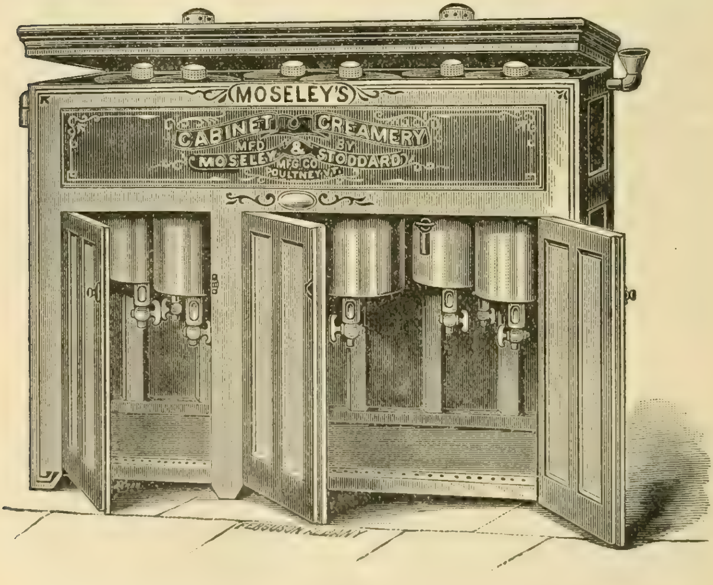
APPARATUS ADAPTED TO THE DAIRY.

Through the kindness of leading manufacturers of dairy supplies I am enabled to insert the following cuts showing a few of the leading appliances for a private dairy as well as for a creamery, and in the description of these I shall follow the natural course of the process: 1. Cream-raising; 2. Mechanical separation; 3. Churning; 4. Working; 5. Printing and stamping; 6. Packages and Transportation.

CREAM-RAISING.

As has been already mentioned, the original device was a shallow dish of stone, later tin; at first small, gradually enlarging to vats twelve to fifteen feet square. Then came the deep-setting with its necessary accompaniment, cold-setting, and of this last method I wish to speak.

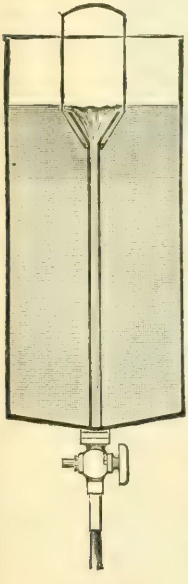
Any deep-setting device must be based upon one and the same principle; it may be modified by a hundred conveniences and ingenious contrivances, but at the bottom of it all is the one simple, fundamental principle, — the surrounding of comparatively slender columns of milk by cold air, or cold water, or pounded ice. The can may have a patented cover, a patented outlet, a patented skimming device, a patented ventilator, or window, or a patent refrigerator, in which to surround or submerge the can in ice, or water, or cold air. The can may be twelve inches in diameter, or eight inches, it may be cleft by a water passage, or its bottom may be reverted into a cold-air tube extending up through the milk, or it might be a complete tubular boiler with one head left out, but the principle in all of these would be the same, and the object to secure a decreasing temperature from 90°, when the milk is set, to 45° at the end of a few hours.



No. 4.

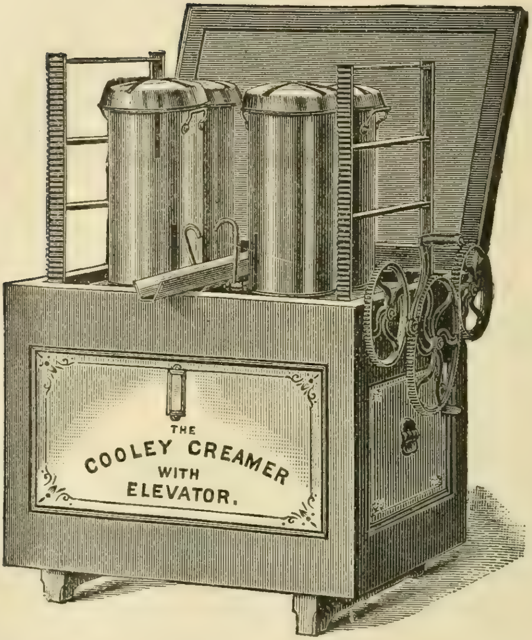
Cut No. 4 represents a Moseley & Stoddard creamery. Either ice or cold running water can be used with this.

It needs no proof to show that the manufactured cabinets, refrigerators, and ice-boxes, together with their respective cans, are convenient, neat, and ornamental, but it does require proof to show that because one manufacturer has patented a particular contrivance for regulating the inflow of water or the outflow of skim-milk, that therefore his apparatus is twenty-five per cent more economical; it may be so, or it may not, but the mere fact of a patented detail, like a can-cover, or a glass window, or a stop-cock, is no proof of superiority, so long as the principle of cold-setting is at the bottom of it all; and the point to be decided is simply whether these characteristic devices are a sufficient convenience to pay for the extra cost.



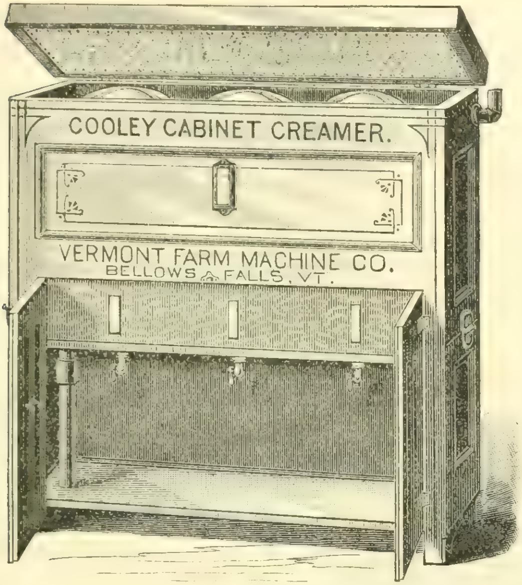
No. 5.

Cut No. 5 shows one of the cans as it would appear if split down through the center. The characteristic of this can is in the skimming device. At the bottom of the can is a faucet through which the skimming-tube is to be passed. This skimming-tube consists of a long tube, one end expanding into a funnel. The operator is to pass this tube down the center of the milk which is ready for skimming, enter the lower end of the tube into the faucet until it rests on the stop-cock, then turn the latter one fourth round, and the tube passes down through; then lower the funnel below the top of the cream, and draw down until all cream is removed. The obvious advantage of this device is that the cream can be drawn off just as readily as by dipping, and with much less labor. It leaves the skim-milk in the can until needed to feed or sell. When the milk is wanted leave out the skimming-tube and open the stop-cock. The disadvantage that at first suggests itself is the liability to become leaky around the stop-cock, but I cannot say from experience that this is at all serious, for it may be that such leaks never occur; but it would be surprising if they did not.



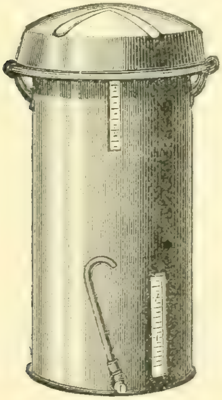
No. 6.

Cut No. 6 shows the Cooley creamer with a mechanical hoisting apparatus to bring the cans to the surface when ready to skim.

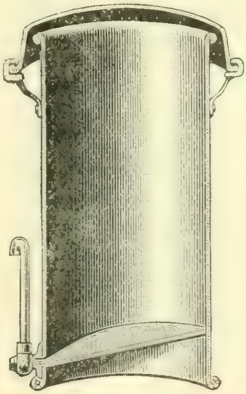

COOLEY CABINET CREAMER.
VERMONT FARM MACHINE CO.
BELLOWS FALLS, VT.

No. 7.

Cut No. 7 is the Cooley cabinet creamer with the cans attached to the refrigerator, and a stop-cock so arranged as to draw the skim-milk out, and later the cream.



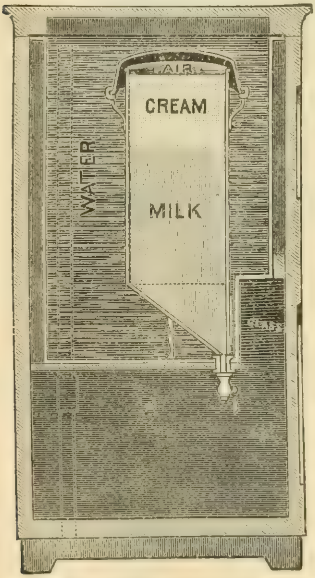
No. 8 *a*.



No. 8 *b*.

Cut No. 8 exhibits two views of the Cooley can, *a* being the general outside view of the complete can, *b* a sectional view of the same.

The Cooley has two distinctive characteristics, one being its skimming-tube, the other the method of totally submerging can, cover and all, in the ice-water. The Cooley can of itself is a simple cylindrical can, eight inches in diameter and seventeen inches high. It has a glass slip secured at the top, and another at the bottom. These slips are to enable the farmer to see the amount of cream on the top of the milk; the one at the bottom is to determine when the skim-milk is all out, and so prevent the wasting of cream by waiting until it appears in the outlet. The cover of this can is a very neat application of an old principle to a new use. It is the principle of the diving-bell, and may be illustrated on a small scale by taking an ordinary tumbler and inverting it, and gently forcing it downward into a dish of water. The water of course does not rise into the tumbler, because the air cannot escape. Now, the cover of the Cooley can is nothing but an inverted pan held so that the top of the can does not touch the inside of this cover; the air prevents water from entering the can just the same as it prevents water from rising and filling the tumbler. This is why the Cooley may be submerged. Cut No. 8 *b* shows the way in which the cover fits the can, and cut No. 9 shows the same for the cabinet creamer, air, cream, and milk being indicated in the cut.



No. 9.

The automatic skimming-tube is another characteristic of the Cooley. cut No. 8 *a* shows this tube standing nearly vertical. It can be swung downward, and in so doing the operator opens the connection with the inside, and the skim-milk commences to run out. Of course at any time when the tube is so far moved as to open the valve, the milk will run out down to a point on a level with the outlet of the tube, and therefore it can be set at any desired point, and the milk run down to that point. This is why the lower glass is used, for if there is a certain number of "spaces" of cream at the top, then the same number, counted up from the bottom, will give a capacity just right to contain all the cream; and if the outlet of the skimming-tube is placed at [the desired point, it will run out the skim-milk and no more.

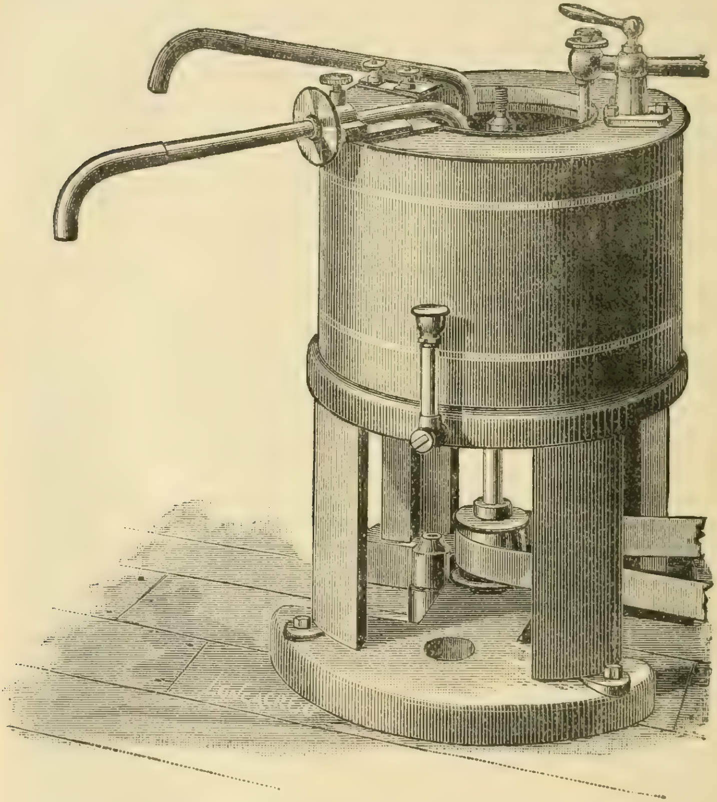
One advantage of the submerged can is that no foreign matter from the air can get into the milk; dust and germs of fermentation are, no doubt, prevented from accumulating in the cream, and there is an increased cooling surface. The skimming device is of no great account, and is often left unused, a dipper being preferred. The first disadvantage which is thought of is the lack of ventilation. There is no chance for the animal odor — that peculiar, disagreeable vapor which rises from milk, and which, as is admitted by all, hastens decomposition if not removed — to escape. It must to a greater or less extent remain in the milk; and it is generally believed that the fat of the milk takes up odors much more readily and retains them more tenaciously, and hence if the animal odor does remain in the milk it is quite likely to become absorbed by the fat, and hence appear in the butter. This opinion is strengthened by the experience of prominent dairymen who have found the animal odor to detract from the quality of their butter.

The only device for surface skimming, except the common dipper, or scoop, is the ingenious combination of dipper, suction, and forcing pump invented by C. H. Waterhouse, of Barrington, N. H. It, of course, is only adapted to large operations, like a creamery, or dairy where one hundred cows are used. It consists of a cone-shaped dipper with a tube coming from the bottom, curving upward to serve as a handle; on to this handle a hose is fastened, and this connects with a common force pump, another delivery hose running from the pump to the cream tank. The operation of this is as follows: The pump is worked by the engine or by hand; the operator takes the skimmer in one hand and lowers it into a can of milk; the cream is sucked into the can and from thence to the pipe and hose. The depth of skimming is determined by the eye just as would be the case in dipping off the cream. It is a rapid-working piece of apparatus. It may be urged as an objection to it that the pump and hose are hard to clean thoroughly, but hot water and steam will no doubt accomplish this.

MECHANICAL SEPARATION OF CREAM.

In all the steps which have placed dairying on better footing the one object has been to hasten the time of cream raising. Shallow pans set forty-eight hours, cold deep-setting require twelve to twenty-four, but no radical change was made until mechanical force was studied with a view to adapting it to cream separation.

The first point to be settled is, How can the globules of fat, which are so evenly mingled with the skim-milk, be sorted out? When a body is rapidly revolved around a central point, every particle of that body has a tendency to fly away in a tangent, and the heavier the particle the faster it moves. Take the common illustration of a grindstone with water on its surface. If it is turned slowly, the water remains on the surface, but if it is turned rapidly, the drops shoot off in all directions; increase the speed still more and the stone breaks, the piece flying from the center, and the heavier the fragment the greater the force. The amount of force tending to draw away from the center is very great when the velocity is high. Thus in the pamphlet above alluded to the author states the following: "Suppose a stick to make a thousand revolutions a minute around its center in the horizontal plane, at each end carrying a pail with milk weighing sixty pounds, and supposing the average radius



No. 10.

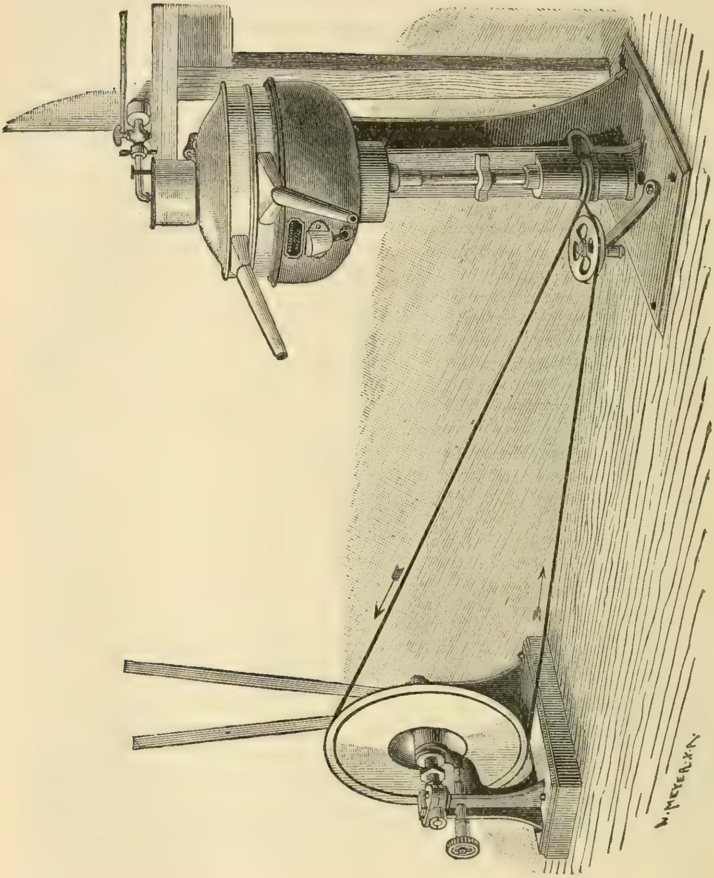
to be two feet. Then the force with which each pail will pull the stick is about twenty tons." This illustrates the tendency of heavy bodies to rush away from a center around which they are revolving. The principle of the separation of liquids from solids was first applied in removing molasses from sugar and also for extracting water from solids. This was effected by placing the mixture of sugar and molasses in a cylindrical shell, the walls of which were perforated. The cylinder was then revolved around a vertical axis until the molasses was forced out through the holes in the shell of the cylinder. This same method of removing water is now applied in the centrifugal clothes-wringer so much used in laundries.

In writing the history of the cream separator Mr. Frederiksen divides the machines into three classes: 1. Pail machines; 2. Drum centrifugals; 3. Continuous separators.

During the year 1859 a German proposed a method of testing the richness of milk by putting samples in glass tubes, and swinging these tubes at a high velocity until the skim-milk and cream separated. In 1864 a brewer named Prandtt placed glass cylinders filled with milk in a common brewer's centrifugal extractor, but his experiments were not very encouraging. In 1870, says Mr. Burnett, a Rev. Mr. Bond, of Northborough, Mass., succeeded in raising cream in two glass jars revolved at two hundred turns per minute, but thus far little was accomplished except that it was proven that cream could be raised, but nothing resulted even pointing toward a practical application of the principle in dairying. In 1873 Mr. Jensens of Denmark suspended pails at the end of a rapidly revolving horizontal bar. This machine was the first which in any sense gave practical results, and is a representative of the first-class of centrifugal machines.

According to Mr. Frederiksen the "first large centrifugal creamer was exhibited at the International Agricultural Fair in Bremen, 1874." The principal parts of the machine were, first, a strong vertical shaft speeded to seven hundred revolutions per minute. On the summit of this shaft was an iron disk revolving in a horizontal plane. On the edges of this disk were fastened hooks, and on these hooks heavy metal pails, filled with milk, were suspended. The shaft, disk, and pails were then set in motion, and the pails and their contents, by swinging at the speed mentioned, effected a more or less perfect separation of the cream.

In machines of this class the principle is illustrated by the well-known trick of swinging a pail nearly full of water over one's head. The outward tendency of the water prevents its falling from the pail when bottom side up. The separation was caused by the heavy skim-milk rushing to the point farthest from the center, which, of course, would be the bottom of the pail, the cream remaining on top.

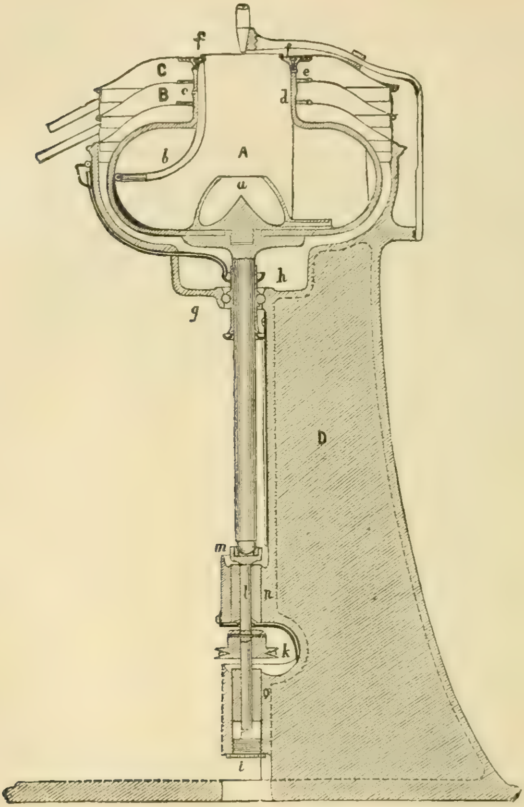


No. 11.

Denmark seems to be the home of the centrifugal creaming process. The first practical machine of the pail variety originated there, and in like manner the first of the second class or drum centrifugals. An engineer named Winstrup in 1876 exhibited a new machine, embodying the essential characteristics of the water extractor used in drying sugar. I quote from the pamphlet previously mentioned: "A vertical cylinder or drum revolving around a shaft at its own axis. From the circumference of the drum four wings, or break-walls, extended about half-way towards the center radially and vertically arranged to compel the milk to travel with the machine. The drum being partly filled with new milk, it was started, and the milk would soon take the position of a perpendicular cylinder, leaving an empty cylindrical space around the spindle. The motion being continued for some time, the heavier particles, the skim-milk, would be thrown towards the wall of the drum, the cream accumulating nearer the center of rotation. As soon as the separation was complete the valves in the periphery of the drum were opened, while in motion, for the skim-milk to escape. All the latter having been thrown out, the valves were shut, and the motion of the drum was stopped, upon which the cream was removed and a new supply of sweet milk poured into the machine to be treated in the same way."

Lefeldt and Lentsch in Germany, in 1877, offered for sale four machines of the drum centrifugal class, capable of separating from 110 pounds of milk to 660 pounds, the price of the machines being from $200 to $750. "In the same year they established the first practical centrifugal creamery at Kiel, Holstein, where four machines were soon running. . . . Dr. W. Kirchner, professor of agriculture at the University of Halle, made experiments with this machine, and succeeded in extracting 94 per cent of the butter-fat of the milk." In all of these machines it was necessary to stop and remove the skim-milk, or cream, or both, and fill again with new milk, and to repeat the process until the supply of milk was exhausted. The weight and velocity of these drums when full of milk were such that considerable time was wasted thus. Fleischmann found that with Lefeldt's machine of 220 pounds' capacity ten minutes were required in getting up to 800 to 900 revolutions per minute and thirty minntes to stop it. These disadvantages soon encouraged experiments in the direction of the third class of continuous separators, or such as are fed by a continuous stream of new milk, the skim-milk and cream passing off by some device into separate receiving tanks.

During the years 1878–79 two continuous separators appeared, one the Nielsen & Petersen, a Danish invention, the other named after its inventor, De Laval, a Swede. In the United States the Nielsen & Petersen is known as the Danish-Weston separator, and it and the De Laval are practically the only ones in use. There are differences in the construction which are best shown by the cuts Nos. 12, 13, and 15 *b*.



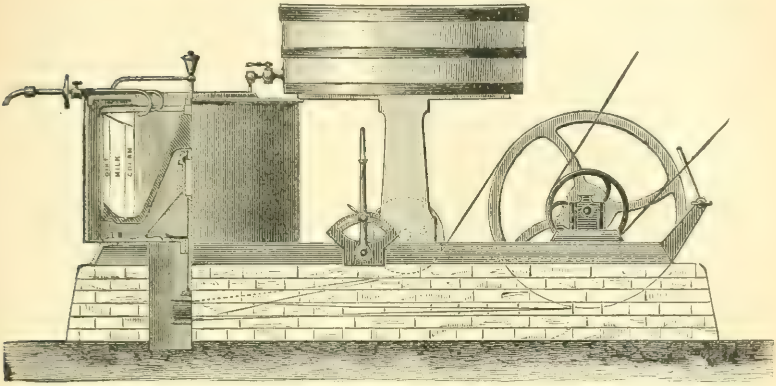
No. 12.

I will first describe the De Laval, cut No. 12, which represents a sectional view just as the machine would appear if cut directly down through its central line. *D* is a cast-iron frame, about three feet high, weighing about 400 pounds, and covering a floor space of 18 x 24 inches. This frame is cast with a bowl-shaped enlargement, 14 inches in diameter. This is represented in the cut by the shaded area connected with the frame. Within this enlargement is the separator bowl *A*, which in the cut is also shown by shade lines. This bowl is elliptical in shape, expanding into a cylindrical neck in the top. It is made of Swedish steel, five eighths of an inch thick, is 12 inches in diameter, and mounted on a vertical shaft, one inch in diameter, passing through the bottom of the cast-iron, bowl-shaped casing of the frame. At the lower part of the frame are the parts marked *k*, *l*, *m*, *n*, *o*, etc. These are a shaft *l*, on which the V-rimmed pulley *k* is fastened by a pin. This shaft runs in the boxes *o*, *n*, and is free to move up and down, but is held in place and bears on the nut *i*. It will be seen that the entire weight of bowl, shaft, and pulley must rest on this nut; and the wear would be considerable unless some means were devised to reduce friction. This is accomplished in the following way: The shaft has inserted in its lower extremity a steel plug, one fourth inch in diameter, with a rounded head. The nut *i* is surmounted by a similar plug. These are the only surfaces in contact so far as vertical pressure is concerned. The two rounded surfaces present only a point to each other, and are hardened to an extreme degree. They also run in an oil chamber, always surrounded by oil, and friction is thus reduced to a minimum. The top of the shaft *l* is enlarged, and a cup-shaped space turned out of the metal. In this cup a wooden plug, also having a cup turned in its upper surface, is driven; this is marked *m* in the cut. The result of this is that the shaft *l*, to which power is applied, is terminated on the top by a wooden cup of one half inch radius, exactly fitting the end of the bowl shaft, which is turned to a half sphere and rests in this cup when the machine is ready to start. The bowl *A* and its shaft as far down as *M* (the wooden cup) can be lifted up and taken out for cleaning and repairs. At the point where the shaft passes through the cast-iron frame an ingenious box *H* is arranged. It is surrounded by rubber packing, which allows of a considerable amount of side motion in all directions. This, to a limited extent, allows the bowl and its shaft liberty to sway and vibrate around the point *M*, so that when in motion it is in nearly the same state as a top at full speed, and the greater the speed the more steady the action. After the bowl is set in place two tin covers are passed over the cylindrical neck, and fastened to the frame. These covers form the two spaces marked *C* and *B*, and each ends in a spout shown projecting at left of cut. In the bowl a point or two needs notice. At the bottom is a cone *A* surrounded by a cup, and on one side of this cup is a small opening or tube extending about half the radius of the bowl; *B* is a bent tube, the open end being at that point of the bowl farthest from the center and curving upward, extending up the inside of the neck. At the point *E* a hole is drilled through the neck, and through one side of this tube. Through this the skim-milk finds its way out into the stationary chamber.

We will now assume that the parts are sufficiently described, and that the separator is ready to be set in motion. An endless woven belt, three eighths of an inch in diameter, runs from an intermediate shaft and pulley 24 inches in diameter on to the small pulley *k*. The intermediate is run at a speed of 1,200 per minute, and the bowl at the enormous velocity of 8,000 revolutions per minute. At the extreme top of the cut is shown the supply faucet, through which a stream of milk is let on as soon as the machine is at full speed. This stream falls directly upon the point of the cone *a*, spreads out, filling the surrounding cup, and is pressed out through the tube at the bottom as soon as the particles of milk strike the cone. The heavy skim-milk rushes ahead of the lighter cream, and by the time it traverses one-half the radius of the bowl, or three inches from the center, it has outstripped the fat globules, leaving them all behind near the center of the bowl, and in its outward effort the skim-milk is collected in the largest part of the bowl. As more milk runs in, the tendency of the bowl to fill is prevented by the tube *b*, which takes the skim-milk from the outside up to the point *c*, where it escapes through a hole less than one sixteenth of an inch in diameter into the chamber *b*, and out through the spout. The light cream never gets more than two thirds out to the extremity of the larger diameter of the bowl, and probably not more than half-way. It then creeps up the neck of the bowl, and out through a saw-cut in the neck marked *e*, into the cream chamber *c*, from which a spout conducts it to the cream vat. Thus a stream of milk, supplying 400 quarts per hour, is perfectly separated, and the cream removed through one aperture and the skim-milk through another.

Probably very few, who are unacquainted with machinery of various kinds, will even conceive of the fearful velocity of this machine, and most likely those who are familiar with machinery will at once say that 8,000 revolutions per minute of a bowl 12 inches in diameter, weighing 45 pounds, is an impossibility; but it is a fact that even 10,000 to 11,000 revolutions are often made by De Laval separators in actual work, and the claim of the manufacturers is that each bowl is tested up to 20,000, so that the factor of safety is ample.

The construction of the Danish-Weston is considerably different, as will be best seen by looking at cuts Nos. 13 and 15 *b*. Cut No. 13 has one fourth of the guard casing taken away, and shows the cylinder in section. Cut No. 15 *b* is a sectional view of this cylinder taken out of the machine; as will be seen, the bottom of the cylinder is returned into the interior in a cone-shaped elevation rising nearly as high as the surface of the cylinder; the apex of this cone is the point of attachment to the shaft. The chief peculiarity of this machine is in the method of removing cream and skim-milk.



No. 13.

Cut No. 13 shows how the milk, cream, and dirt will be arranged in the bowl forming a perpendicular wall, cream nearest the center because lightest, skim-milk next, and foreign matter next the wall because heaviest. The top of the cylinder has a double head, leaving a space between the two, *c* and *d*, cut No. 15 *b*. The head *d*, or skim-milk plate, does not rest against the wall of the cylinder, but is separated from it by a narrow space. Remembering that the heaviest part goes to the wall, and then is forced upward, it will be seen that nothing but skim-milk can pass through this outside space, and, therefore, that portion of the cylinder between *c* and *d* must fill with skim-milk. The cream, on the other hand, rises in the center of the bowl and accumulates under the skim-milk plate *d*. Two curved tubes, shown in cut No. 13, reach under the covers, one between *c* and *d* removing skim-milk, the other below *d* removing cream, and by adjusting these either in or out, the ratio between cream and skim-milk may be varied at pleasure, running either thick or thin cream as desired.

Both the De Laval and the Danish-Weston are successful machines, each having advantages and disadvantages. The possibility of regulating the thickness of cream while running is certainly an important point in favor of the Danish-Weston, but the simplicity of construction of the De Laval, together with the ease with which it can be set up, no foundation being needed, and the readiness with which the bowl is taken out for cleaning makes the latter machine much easier to run. So far as the power required to run is concerned there is little difference. The Danish-Weston is built in larger sizes and has some advantages in this respect, but recently the De Laval has been built in two or three sizes, giving a range of capacity almost equal to the Danish-Weston. It is claimed that the friction or violence done to the cream, or fat globules, is greater in the Danish-Weston, as the rapidly revolving cream is suddenly picked up by the cream tube and its direction changed, but this is almost entirely an imaginary evil, and applies about as much to one separator as to the other. The fact is that fat globules are not living beings, easily destroyed; they are simply minute drops of fat capable of sub-division, or of combining two or more into one. Does any one who has ever studied this matter suppose that cod-liver oil is less nutritious because finely divided in an emulsion? or that the quality of butter is changed because the globules in the milk may have been doubled in number by agitation? But even if it were true that the fine globules made poorer butter, has any one yet proven that the separator does divide these minute particles into two or more? I have examined milk, cream, and skim-milk under the microscope with the express purpose of determining, if possible, whether the globules in separator cream are injured, or made smaller, or increased in number by division, and I will here state that I do not believe any man can pick out the separator cream in distinction from cream raised by nature's process, unless it be from the fact that dirt and the impurities from the udder of the cow are less common in the former than in the latter. There is no mangling of globules, and the very idea is absurd. If any one will take alcohol and water and mix them in just such proportions that a drop of some oil, say linseed, will just remain at rest without rising or falling, it will be observed that the drop is perfectly spherical. Now, by violent shaking, this one drop may be broken up into a dozen, and none of them will be flat, or cubical, or anything but spherical; they can't be any other shape; it is a physical impossibility. It was imagined at one time that each drop or globule of fat in milk was securely done up in a sack, that a blow on one side of this might cause an indentation which would prove permanent, thus disfiguring the globule, and probably also the ball of butter in which it appeared, but such nonsense is a thing of the past, or ought to be.

Some people imagine that the grain in butter is dependent upon the size and perfection of the globules, and that an injured globule will materially reduce the probabilities of perfect grain in the butter, but such an idea is wholly groundless. The average size of the rounded granular particles in well-made butter we may call one sixteenth of an inch, and as the average fat globule is $\frac{1}{4000}$ of an inch, there would be 14,000,000 of these globules in a single granule; hence, it will be seen that there can be no direct relation between the shape, condition, or size of these minute particles and the shape, condition, or size of the little masses which make up the grain of the butter.

There is a surprising lack of knowledge among scientific dairy writers concerning the nature of the change wrought in cream by churning; the result is known, but the cause remains a mystery. Certain facts are known. It is certain that the identity of the globule as it exists in the milk is maintained in the cream. It is certain that cream need not suffer any chemical change to become capable of churning, for, as will be seen by an experiment recorded later in this report, I have churned the cream from milk within two hours from the time it was in the cow's udder; hence "ripening" is not essential to the process of churning. Again, it is also true that the globules maintain their individuality in the mass of butter, being as distinct as in the milk, but crowded much closer together. A theory once advanced was that the globules had a membranous covering, and that churning, either by friction or concussion, broke or wore away these sacks, allowing the inclosed fat from several to run together, thus producing masses of fat or butter; but the objection to this theory is that butter is not a mass of fat in the way that tallow is, but it is an aggregation of individual fat globules just as they existed in the milk. The identity of each is not lost, hence the error of the idea of a running together. Now there can be no doubt that each globule is in a certain way incased in a covering of albumen or caseine, for any kind of fat, if finely divided and shaken up in a solution of any albuminoid, becomes coated by an adhering film, which is no doubt sufficient to keep the fat from running into drops, like oil in water, and it is evident that this film is retained in the butter or no globules would be seen under the microscope. The following experiment was tried recently: I got a small sample of fresh creamery butter and spread a thin coating of it on a glass slip, and examined it under a magnifying power of 200. The globules were as distinct as in milk or cream. I then held the glass over a lamp and melted the butter. The result was a loss of all appearance of globules and the appearance of oil drops. Another portion of butter was placed in a test-tube and the tube half filled with hot water. The whole was then boiled and set aside for the fat to rise to the surface. A bit of this fat was placed on the slide, and exhibited large spherical masses of fat, each estimated to contain at least a thousand of the original fat globules, thus proving that heat in some way causes the breaking up of the fine globules and hastens their running into masses. The tube was next violently shaken until it became of a white color from the thorough mingling of the fat in the water. This mixture when placed under a microscope exhibited a great variety of globules, varying from the natural size of the globules in milk to six or eight times as large. The method of preparing emulsions of cod-liver oil is a practical demonstration of the possibility of taking an oil without structure and converting it into an emulsion in which the oil is very finely divided, and remains so just as long as milk-fats remain in their peculiar individual state.

We may extract the pure fat from milk with ether, and by evaporating the ether get an oil free from any trace of structure. Now if this fat is agitated violently in water containing a solution of albumen, the fluid fat is broken up into small particles, which remain suspended in the liquid, so as to form an opaque milky emulsion." (Yeo's Physiology, p. 79.)

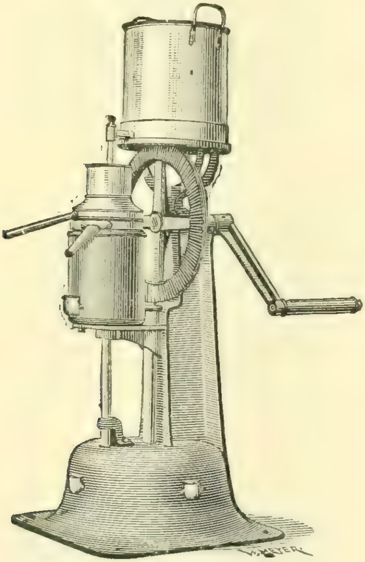
It has been thought by some that cream out of contact of air would not churn, and a theory has been advanced making the churning process a chemical change, dependent upon the presence of oxygen, but recently I have assisted Prof. Blanpied in testing the theory.

A quart bottle had in it a pint of perfectly fresh cream, direct from the separator. The neck of the bottle was then connected with an air pump, and a vacuum of twenty-nine inches produced in the bottle. Less than ten minutes' shaking of this bottle caused the butter to gather in as fine shape as it could have done in any churn, however well supplied with air.

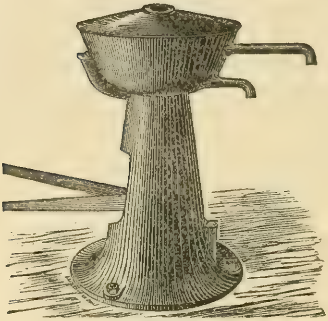
All of these facts go to show that churning is essentially a process of overcoming the conditions which favor emulsification of fats. It is not a chemical process, though chemical changes in the cream hasten it. It is independent of the presence or absence of air. Agitation and concussion hasten the process by forcing individual globules into contact one with another, and cohesion holds them there. Souring the cream makes the globules come together quicker, for the reason that an emulsion is best made and maintained in an alkaline liquid; and as churning is a demulsifying process it is very natural to suppose that acidity will hasten the coming together of the globules.

I have heard it argued with reference to the De Laval separator, that the globules passing through the cream slot are squeezed and injured. Now the fact is that it takes about two hundred and fifty globules to reach across this cream slot, and just where the squeeze comes in I fail to see.

Until recently there has been no method of separating small quantities of cream economically, but cut No. 14 shows a De Laval hand separator adapted to the use of small dairymen having ten or more cows. The principle and many details of this hand machine are precisely like the power separator. It is said to be easily worked and capable of separating 125 quarts of milk per hour. If this piece of apparatus is really what it claims to be, and is as easy to operate, it is one of the greatest economizers that the private dairy has ever had added to it. We will suppose a man to have ten cows, producing an average of 125 pounds of milk per day. It will take two men one half hour to milk; a third man can in the same time run the milk through a hand separator, the skim-milk to be immediately fed, warm from the cows, to calves, while the cream can be cooled and stored ready for churning day. There would be a gain derived from the extra value of the skim-milk which would soon pay for the machine. I can conceive of no mechanical device more valuable to those farmers who from location cannot become patrons of a creamery.



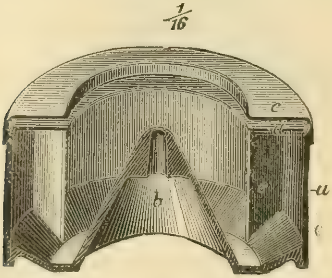
No. 14.



No. 15 *a*.

Cut No. 15 *a* shows a Philadelphia separator, the construction of which resembles the De Laval.

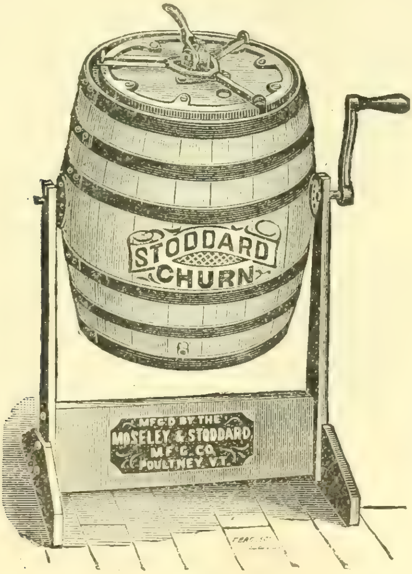
Cut No. 10 represents a large Danish-Weston, ready for the power to be applied; and cut No. 11 represents a complete De Laval.



No. 15 *b*.

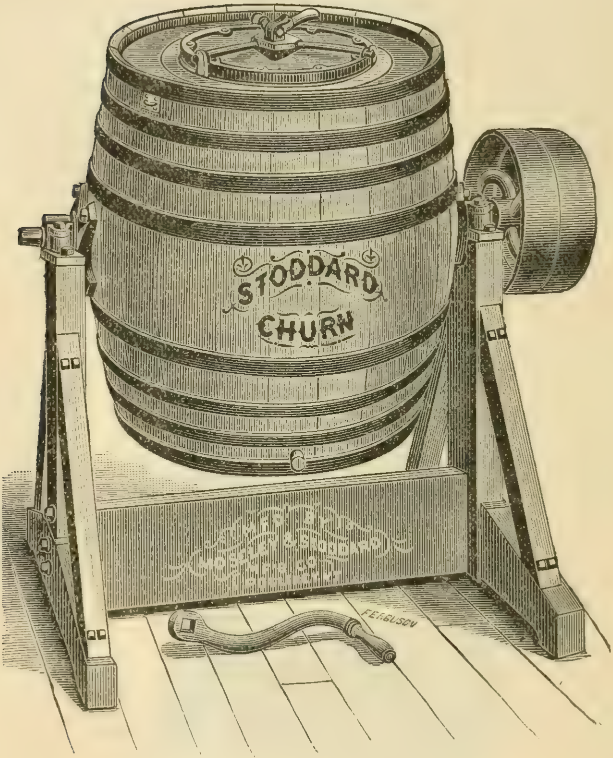
CHURNS.

The original churn was very simple in construction, — a tall bucket-shaped receptacle for cream, a dash, with an upright rod passing through the cover of the churn, the "up and down" motion causing the necessary concussion. Then came the rocking churn, and still later a notion filled the minds of inventors that the old churn was not complicated enough, and cranks, gears, and floats rapidly appeared, until the minute cream thresher was accepted as the standard; but it was soon learned, by experience, that a good churn need not be complicated, need have no gears or paddles, and to-day the best churn is the one having no inside mechanism for driving the globules into contact.



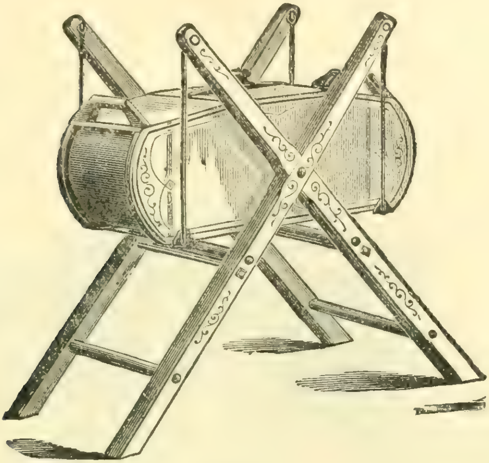
No. 16.

Cut No. 16 represents a very simple and effective churn — a barrel with no inside work. The cream falls from end to end as the barrel is turning, and the concussion does the work.



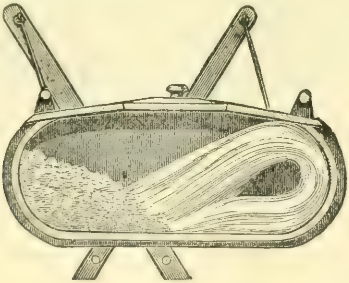
No. 17.

Cut No. 17 represents the same thing adapted to the creamery.



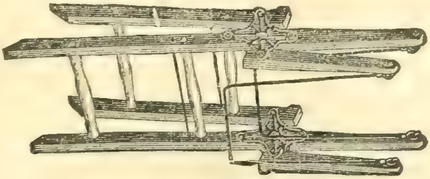
No. 18.

Cut No. 18 brings to memory the old rocking churn. It represents a complete Davis swing churn.

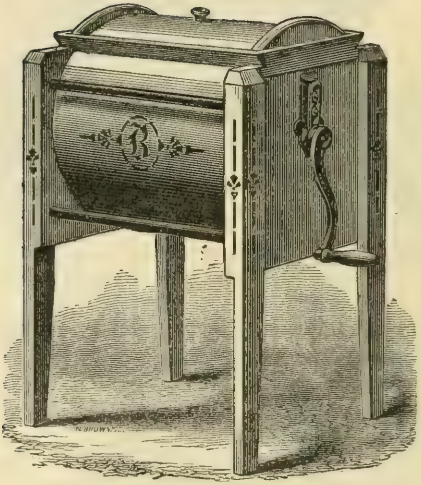


No. 19.

Cut No. 19 shows how the cream is mixed and thrown from end to end.

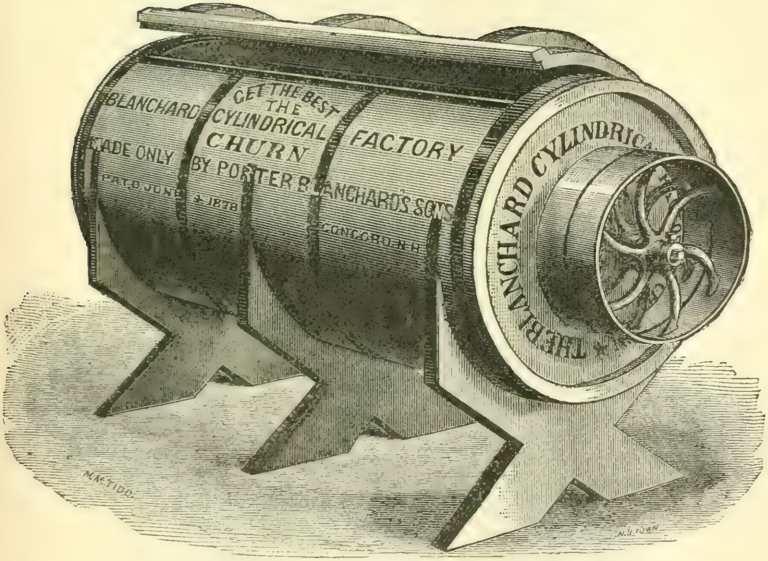


No. 20.



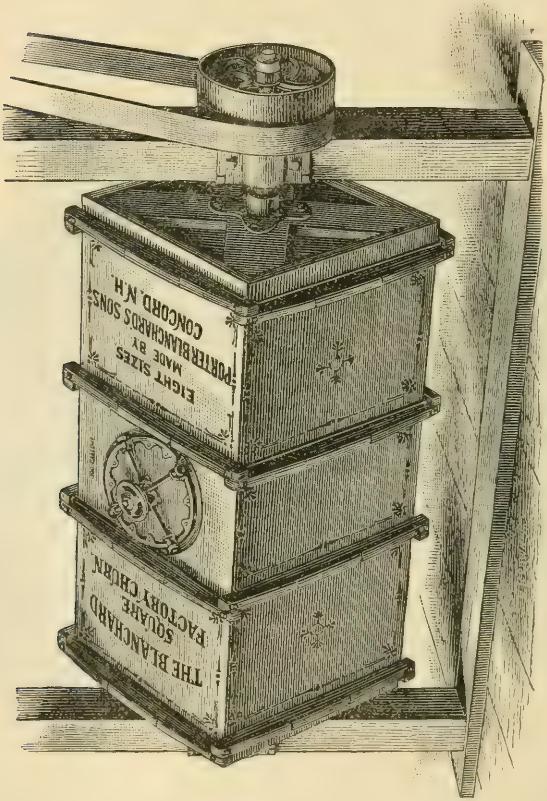
No. 21.

Cut No. 21 will be more familiar to the wives of New Hampshire farmers than any other cut in this report. It represents a churn found in more dairy-rooms in this State than will be found of all other makes. It is the "old reliable," and though open to a part of the objection urged against complicated churns, it is nevertheless possessed of so many good characteristics that nothing can change the minds of thousands of good butter-makers as to its superiority over all others.



No. 22.

Cut No. 22 shows a Blanchard factory churn, the principle of which is like the well-known dairy churn.

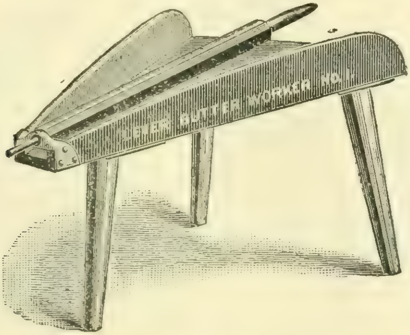


No. 23.

Cut No. 23 is the Blanchard square box for creameries. There is no inside mechanism in this, simply a box, which is rotated at the rate of 45 turns per minute, and the cream, dropping from corner to corner, is agitated and mixed thoroughly.

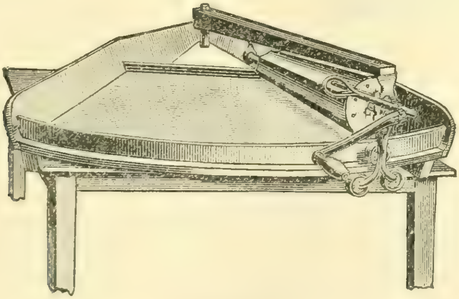
BUTTER-WORKERS.

The original butter-worker was the hand of the dairymaid, or the wooden bowl and paddle, and many a pound of good butter is made to-day with these same appliances, but there are objections to keeping the hands in contact with butter too long, and the whole array of butter-workers has been invented to prevent this handling of butter.



No. 24.

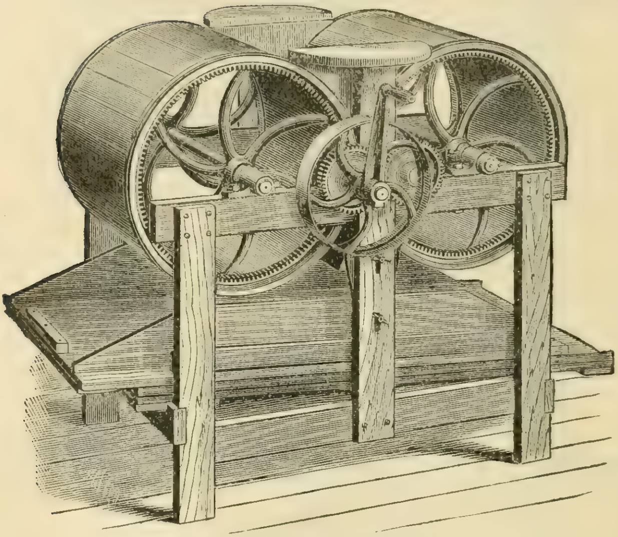
Cut No. 24 shows the most simple form of worker adapted to the private dairy.



No. 25.

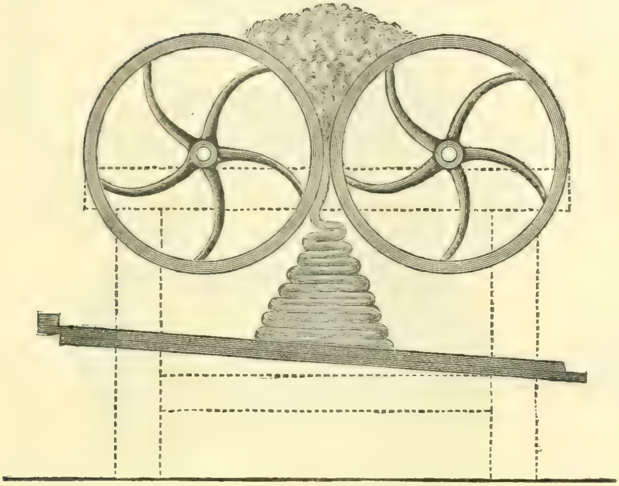
The Skinner worker, cut No. 25, is also adapted to the private dairy as well as to creameries, and it combines more good qualities for a hand-worker than any other which I have seen.

In the power-worker line there are a great many. The Mason, with its revolving table and double roll, is a general favorite among butter-makers.



No. 26.

Cut No. 26 shows a new worker, the Blanchard, which certainly has advantages over any other yet in the market. It consists of two large rolls, geared to revolve precisely alike and toward each other, the surfaces come within about three eighths of an inch of each other, and the butter is pressed upon equally in all parts, with positively no grinding action as is the case with all workers where butter rests on a table and rolls pass over the top.



No. 27.

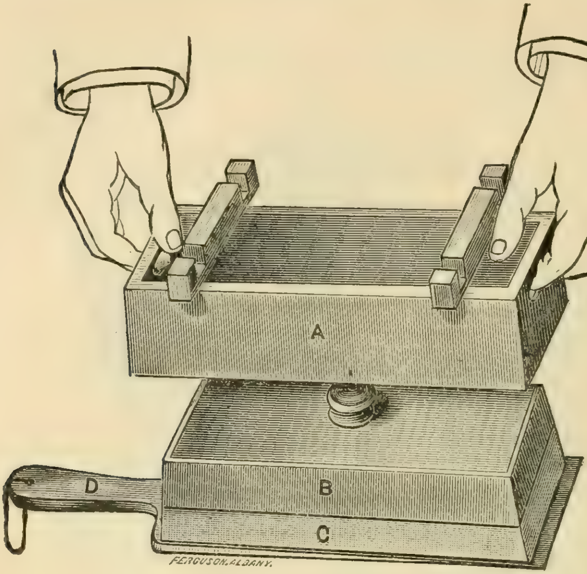
Cut No. 27 shows a sectional view of this worker, with a representation of the butter passing through. It is a very rapid worker, it being possible to thoroughly work 50 pounds of butter in from one to two minutes.

There is one great objection to most butter-workers, they grind the butter, making it more or less salvy and lacking in grain.

PRINTING AND PACKING.

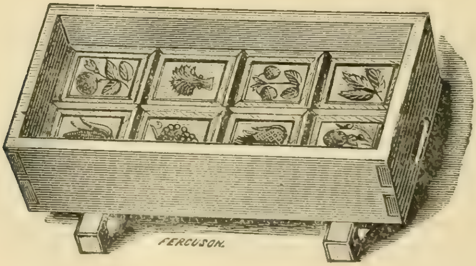
Good butter is just as much benefited by neat packages as is poor butter, and no dairyman should allow a good product to appear at a disadvantage because of untidy packages.

There are two ways of preparing butter for the market, one in "prints," the other in bulk, whether in tub, box, or jar.



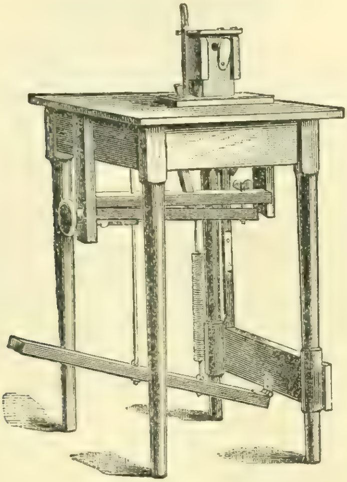
No. 28.

Cut No. 28 shows a very convenient and comparatively rapid butter-printer, well adapted to any dairy, and in fact much used in creameries.



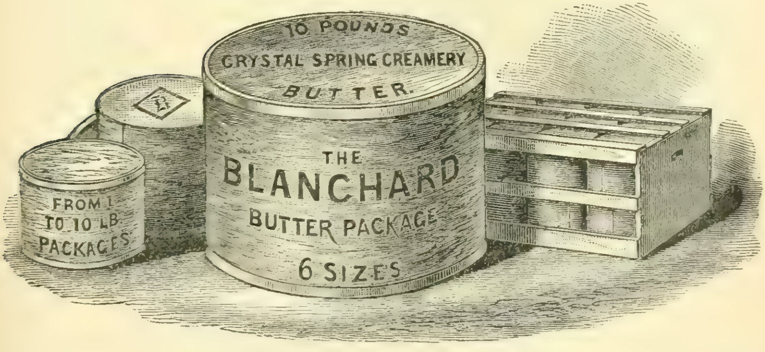
No. 29.

Cut No. 29 shows the carved mold, which gives the butter its fancy raised figures or monogram.



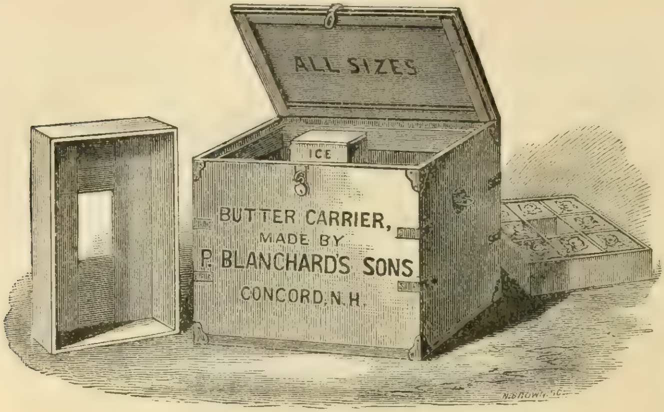
No. 30.

Cut No. 30 represents a Nesbit self-regulating foot-power printer, which automatically regulates the size of the print.



No. 31.

Cut No. 31 shows a round butter-box.



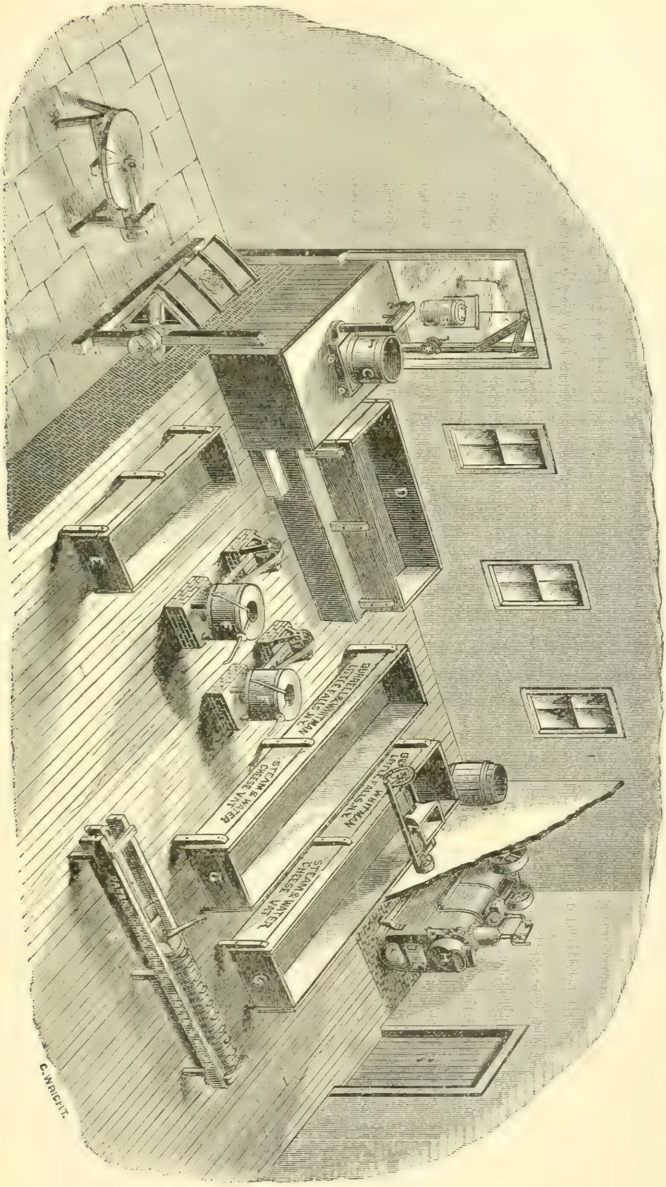
No. 32.

Cut No. 32 represents a butter-carrier, in which from thirty to fifty pounds of print butter can be packed; a quantity of ice may be placed in the central space, and the whole shipped to a considerable distance even in hot weather. These cases are of course returnable. The great bulk of butter, however, is yet packed in five or ten pound boxes, either square or round, and in tubs ranging from fifteen to fifty pounds.

A great deal of importance is rightly attached by all dairy writers to the preparation of the tubs or boxes. Of course a new spruce tub is not unpleasant in odor, but still buyers do not want the flavor or odor of spruce in their butter, and it is a question of considerable moment how to prevent this. Probably there is no better method than a combination of steaming and salting; or if steam is unavailable, boiling water can be substituted. A thoroughly steamed or scalded tub, if filled with a strong brine made from clean rock-salt and allowed to stand twenty-four hours, will give very little trouble by imparting flavor to the butter. Round boxes may be treated the same way, but the square boxes, which are deservedly popular, cannot be steamed, and a slight coating of melted paraffine, spread while hot, with a varnish brush, will probably prove the most desirable and thorough treatment possible.

CREAMERIES.

Cut No. 33 represents an inside view of a modern creamery, and brings us to the subject of creamery construction, etc. There are at present two systems of creamery management, based upon distinct conditions, both equally well adapted to their respective surroundings, neither possessing all of the advantages or disadvantages.


BURRELL & WHITMAN
LITTLE FALLS N.Y.
STEAM & WATER
CHEESE VAT
WHITMAN
LITTLE FALLS N.Y.
STEAM & WATER
CHEESE VAT
C. WRIGHT.

No. 33.

CREAM GATHERING.

This system is so called because the cream is gathered by the creamery managers at each patron's house, carried to the creamery, and there stored, churned, etc., and sold.

The chief advantage of this system is the fact, that as the cream amounts to less than one fifth of the milk, it can be brought from longer distances than the whole milk. In comparatively thinly settled communities, where a distance of five to eight miles is covered in all directions, this one advantage is sufficient to recommend this system above all others.

The greatest objection to the cream-gathering plan is the erroneous assumption upon which it is based, namely, that equal bulks of cream will produce equal amounts of butter. Now this is far from true, and it is time that the per cent of cream should be cast aside as even an approximation to the value of milk. That it is convenient to assume this is evident. Take any of the milk-cans with the glass slip in the top, and it is possible to see exactly how much cream there is in volume. Now, if cream is invariable and a quart from any and all sources will produce identical quantities of butter, then we have a very cheap method of determining the purity and richness of milk; but experiment after experiment, test after test, and analysis after analysis, have proven that the per cent of cream is no guide to the actual butter-producing value of milk, and the variations are so much that it is the duty of every one interested in the science and art of dairying to condemn so unreliable a test. It is insisted by a few that the per cent of cream bears a fixed and certain relation to the per cent of fat, but this is not so.

James Long, the English dairyman, gives the following tests, which show the per cent of fat and the per cent of cream; the former obtained by analysis, the latter by the cream glass shown in cut No. 35. The milk of three cows was tested.

No.	Per cent of Cream.	Per cent of Fat.
1	2	2.93
2	16	2.76
3	16	4.83

Another series gave, —

No.	Per cent of Cream.	Per cent of Fat.
4	3	3.46
5	13	3.16
6	14	2.97
7	12	2.34
8	17½	2.51

Third experiment, —

No.	Per cent of Cream.	Per cent of Fat.
9	4.5	4.57
10	11.5	2.64
11	20.0	3 67
12	6.5	4.10

It is easy to see that there is no fixed relation between per cent of cream and per cent of fat in these, nor even an approximation to a fixed relation.

Take the four highest cream indications, Nos. 2, 3, 8, and 11, the average cream per cent is 17.4, the average fat 3.44 per cent; ratio of latter to former 1 to 5.05. Now take the Nos. 1, 4, 9, and 12; average cream 4 per cent, fat 3.76 per cent; ratio 1 to 1.06. If, now, we were going for the best cow among the twelve, and depended upon the cream test, we should pick No. 11, but her milk only contained 3.67 per cent. No. 9 gave nearly 1 per cent more fat, but indicated only 4½ per cent of cream.

Mr. G. S. Philbrick, of Tilton, N. H., in his recent experimental work has determined the per cent of fat, and has also had his samples analyzed. A cow on corn meal and shorts gave 13 per cent of cream and 3.04 per cent of fat. The same cow on corn meal and cotton-seed gave only 9 per cent of cream, but 4.06 of fat.

Jan. 29, 1886, I set the milk of two cows in the per cent glasses, and found the following per cent of cream, and by analysis the per cent of fat given below:

		Per cent Cream.	Per cent Fat.	Ratio of Fat to Cream.
No. 1.	Temperature 34°	19	4.82	1 to 3.94
No. 2.	" 34°	20½	3.08	1 to 6.65

One of these cows was part Jersey, the other, No. 1, a registered Durham.

The "National Live Stock Journal" has on several occasions had the results of tests to see if the per cent of cream is a reliable guide. The following table is from its columns. The table has been abridged, but shows the more important parts. Column one gives patron's number; column two, number of ounces of butter to one "inch of cream," or 113 cubic inches.

No. Patron.	Ozs. Butter.	No. Patron.	Ozs. Butter.	No. Patron.	Ozs. Butter
1	15	13	17	25	17
2	18	14	19	26	9
3	13	15	11½	27	14
4	24	16	9	28	8
5	20	17	20	29	12
6	16	18	12	30	16
7	19	19	9	31	16
8	22	20	10	32	16
9	16	21	18	33	13
10	19	22	13	34	15
11	18	23	14	35	13
12	20	24	12	36	11

In this case each patron is credited with one pound of butter for each inch of cream; but if we compare Nos. 8 and 28 we see that the former made 22 ounces of butter, the latter only 8, a difference giving nearly three times the butter-producing capacity to the cream from No. 8. This may be an exceptional case, but it is certain that cream raised under precisely the same circumstances may vary by 100 per cent in actual value. And it is no surprising thing. Cream is composed of the fat globules, plus a variable quantity of milk which appears as buttermilk after churning. Now if from size of globules, peculiarities of skim-milk, etc., more milk finds its way into the cream and stays there, then certainly that cream is less valuable than it would be if nearer pure fat. Just why any one should ever assume that one quart of cream was as good as another, no matter what the breed or feed, I am unable to say, but it no doubt arose because of the convenience of so calling it; but because it might be convenient if certain things were true, it by no means demonstrates that the things needed are true.

I have mentioned this error as being at the foundation of the cream-gathering plan, and it is so; but it does not follow that because of this error the whole system is wrong. There is no doubt but it is necessary in many localities to adopt this plan, but it is believed that the error may be eliminated by the use of the "oil test," so called; because a measured quantity of cream is churned until the butter comes, then the tube in which the sample is churned is put in hot water and the butter melted to a clear oil, the amount of this is measured by a scale and the per cent of fat determined from a table. If this test is reliable and accurate, then there is a possibility of accurate and just distribution of butter to each patron according to the richness of his milk.

MILK GATHERING.

Milk gathering means the collection of the whole milk while sweet, its transportation to the creamery, and its manufacture into butter; and it necessarily means an additional weight of transportation over the cream-gathering plan, and hence is restricted to more thickly settled communities where there is no need to draw from over three to four miles. With the milk-gathering plan come the advantages of the mechanical separator, and these advantages consist of a more perfect separation of the fat from the milk, and consequently an increase of butter, the removal of much dirt and objectionable matter which by any other system are found part in the butter and part in the skim-milk, less demand for ice, and a more perfect control of all the conditions during the entire process. That there is a more perfect separation is shown by the fact that the per cent of fat left in the skim-milk is much less, especially in the case of those breeds in which the fat globules are small, such as the Holstein, the Durham, etc., but with the Jersey this advantage is less.

During the past year I have analyzed several samples of skim-milk from the separator, also a few from the cold-setting. The following results show the composition of three samples taken by myself just as they came from the separator, the average composition of the milk being 3.9 per cent of fat.

Sample taken Nov. 4, 1886.

	No 1.	No. 2.	No. 3.	Average.
Water,	90.500	90.600	90.600	90.600
Fat,	.033	.029	.026	.029
Caseine,	3.820	3.820	3.920	3.870
Sugar,	4.700	4.610	4.320	4.540
Ash,	.700	.720	.720	.711
Total,	99.753	94.779	99.586	99.750

Dec. 10, 1886, the following conditions were noted:

Temperature of milk in vat	70°
Temperature of skim-milk coming from separator	75°
Temperature of cream coming from separator	72°

The milk after leaving the vat was passed through a pipe surrounded by hot water which brings the temperature up to 75°. This difference of 3° between the cream and skim-milk is not accidental, but always exists, varying from 2° to 5°, and is the result of the property already mentioned, namely, that cream or fat is a poor conductor of heat, and hence heats up slower and cools slower than the skim-milk.

The samples taken Dec. 10 I analyzed. No. 1 is cream. No. 2 is skim-milk. No. 3 is whole milk.

	No. 1.	No. 2.	No. 3.
Water,	77.00	89.000	86.30
Fat,	13.92	.048	3.10
Caseine,	5.14	5.500	5.44
Sugar,	3.80	4.680	4.49
Ash,	.09	.770	.70
	99.95	99.998	100.03

The cream amounted to 22 per cent of the whole as it was then being separated, and with the separator at a speed of 7,500 revolutions per minute there was being run through a trifle over 900 pounds of milk per hour. Samples from each of these numbers were mounted for examination under the microscope, with the object of determining if there is any damage to the globules; but as already stated there appears to be no effect whatever, either in reducing the size or causing them to run together into drops, or any other effect noticeable under a magnifying power of 200. It was evident, however, that only the very smallest globules were left in the skim-milk; and it still further appeared that these particles were so nearly of the same specific gravity of the milk that it was impossible for them to ever come to the surface, and it is evident that no fat ever shows itself on the separator skim-milk.

That the separator gives more butter from the same quantity of milk from the same cows is shown by the critical tests of Mr. L. T. Hazen, of Hazen's Mills, N. H., who has put the cold-setting and the separator side by side in competition with each other, running the milk through the separator two days, and setting it two days; he finds and publicly reports a gain of ten to sixteen per cent in the amount of butter, which if confirmed by subsequent work will more than pay the extra cost of transportation of whole milk over cost of cream-gathering.

Now the separator has its field and the cold-setting has its, and to say that either is better under all circumstances than the other would not be warranted by the facts, but it is perfectly evident that in any community where from one and a half to two tons of milk can be produced within three miles of a given point, there the milk-gathering creamery and the centrifugal separator are more profitable than the cream-gathering plan, because the farmer is at no expense for ice or creamery apparatus, a fifteen-gallon can being all the outfit needed for a dairy of six cows. This can costs $6, or one dollar per cow. With the cream-gathering apparatus the cost is some $6 per cow. Much is said of the cost of transportation of the milk. Now there are plenty of men, with horses, who will gladly contract to draw freight six miles at $1.50 per ton, or they would draw milk to a creamery and return the skim-milk for farmers, three miles away, at the same price, provided they could be sure of a ton at a load, or if they got only half a ton they would draw it for from $2 to $2.50 per ton. A good cow produces five thousand pounds of milk per year. We will call the cost of freight $2 per ton. This makes the entire cost of transportation of milk from farm to creamery, three miles away, and the return of the skim-milk, only $5 per year per cow. This is all there is to it. The hired men milk and place the milk in the can, which is set in cool water in the summer, the milkman comes along, loads the can, and by noon returns with the skim-milk, and the farmer's wife washes the milk-pails and this one delivering can. With the cream-gathering plan there are used one and a half cords of ice per cow during the year; this will cost $4.50, or nearly as much as the whole cost of delivering the whole milk. Then this ice must be put in the apparatus, which will take, on an average, half an hour per day for a dairy of ten cows; this time at twelve and a half cents per hour will amount to a cost of $2.25 per cow; and in addition to this comes the slop and dirt necessarily connected with the use of the ice and the setting of the milk, also the extra trouble of washing additional cans, etc. It is cheaper, in dollars and cents, to pay $2 per ton to deliver the milk and return the skim-milk anywhere within three miles of a creamery than it is to provide and handle the ice necessary to cool the milk at home in any cream-raising apparatus, and the increased amount of butter will be clear profit. I should lay it down as a rule, that in any farming section where enough milk can be produced within three miles of the creamery to make one hundred and fifty pounds of butter daily, the best and most profitable system is the milk-gathering, and the best possible method of managing this milk at the creamery is to run it through the centrifugal separator. I have made this subject one of special importance, because so many towns are now agitating the subject of a creamery, and I should urge all farmers interested to consider the factor of distance which must be drawn from to supply the milk. If farmers six or eight miles away must be included to get three to four thousand pounds of milk daily, then the cream-gathering plan is best, probably, but under the conditions above set forth, where large farms, well stocked with cows, are closely located, then the milk-gathering plan is to be recommended.

COST OF BUILDING AND EQUIPPING A CREAMERY.

Size, 25 by 45, two story, with ice-house, refrigerator-room, and all machinery complete.

Lumber (rough)	$200.00	
Cement and labor on foundation	200.00	
Construction above foundation	150.00	
Shingles, clapboards, and finish	75.00	
Sheathing for inside	60.00	
Team-work drawing materials	100.00	
Doors, windows, etc.	75.00	
Paint and painting	50.00	
Cost of building complete and ready for machinery		$910.00

MACHINERY.

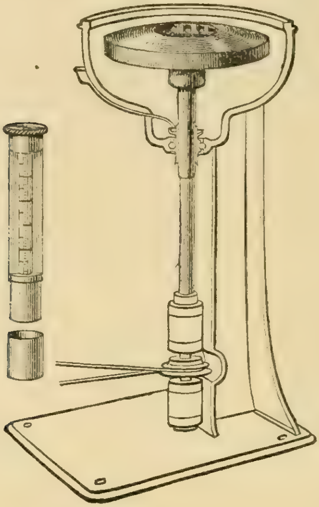
Two separators	$570.00	
Engine (6 horse)	350.00	
Shafting and pulleys	75.00	
Churn	45.00	
Butter-worker	50.00	
Vats for milk and cream	75.00	
Scales	45.00	
Water-tank, etc.	50.00	
Piping throughout	100.00	
Setting machinery	100.00	
Butter-printer	20.00	
Total for machinery and setting		$1,480.00
Cost of building and machinery ready to operate		$2,390.00
Add to this the cost of land for building lot, and the furnishing of a supply of water, and the whole comes within		$2,500.00

Soon after the establishment of the creamery at Hanover, the following experiment was made, and as it has been printed in almost every agricultural paper in the country I deem it of enough interest to reprint in this report :

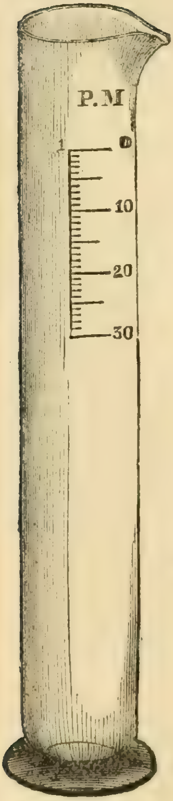
FROM MILK TO BUTTER IN TWO HOURS.

Since the establishment of the creamery at Hanover, it had frequently occurred to me that the morning's milk might be transformed into butter for the breakfast table the same morning, and on Saturday, Aug. 7, it was decided to try the experiment. At 4.30 A. M. the farm help at the College farm were in readiness to commence milking, and at 5 o'clock 60 lbs. of warm new milk were on the scales at the creamery, which is located some sixty rods away. At 5.15 steam was turned on and the Excelsior engine set in motion the machinery which was to do in ten minutes what nature demanded five hours to complete. Five minutes later the De Laval separator was at its full speed of 8,000 revolutions per minute and the milk was turned on; 16 minutes later, 45 lbs. of perfectly sweet skim-milk and 15 lbs. of equally sweet cream were the existing representatives of the original 60 lbs. of milk. At 5.45 the cream, cooled to 56°, was in the small test churn, and at 6.20 the butter had parted company with the buttermilk and was ready for the salt, and at 6.50 it had assumed the form of ¼lb. prints, and in ten minutes more was on the breakfast table at the College farm house, thus completing the journey from milk to butter in just two hours, and only two and one half hours from the time that milking was commenced. It may seem a little unaccountable to those who have never given any thought to the subject of mechanical separation of cream, that butter from the morning's milk may contribute toward the completion of the breakfast of the same day, scarcely two hours after it is milked; yet such is the result of our trial, and such is the triumph of inventor's genius over the plodding ways of Father Time. By the old-time methods, from 36 to 48 hours intervened between milking and churning, and by the cold-setting in patent cans only a part of the cream can be obtained in 3 hours, while the average time is 24 hours, but with the new system all the cream is obtained from 100 pounds of milk in from eight to ten minutes.

ADDITIONAL DAIRY CUTS.



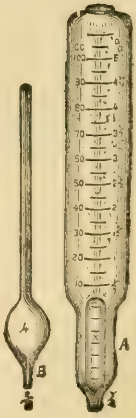
No. 34.



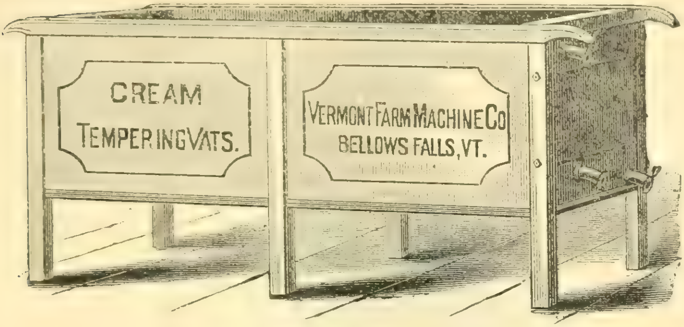
No. 35.

Cut No. 35 represents a per cent glass, intended to show the per cent of cream in milk.

Cut No. 36 is a lactoscope.

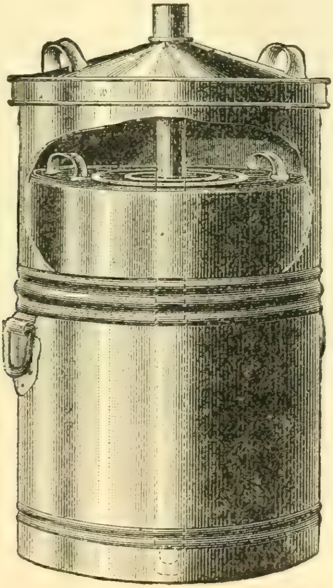


No. 36.


CREAM
TEMPERING VATS.
VERMONT FARM MACHINE Co
BELLOWS FALLS, VT.

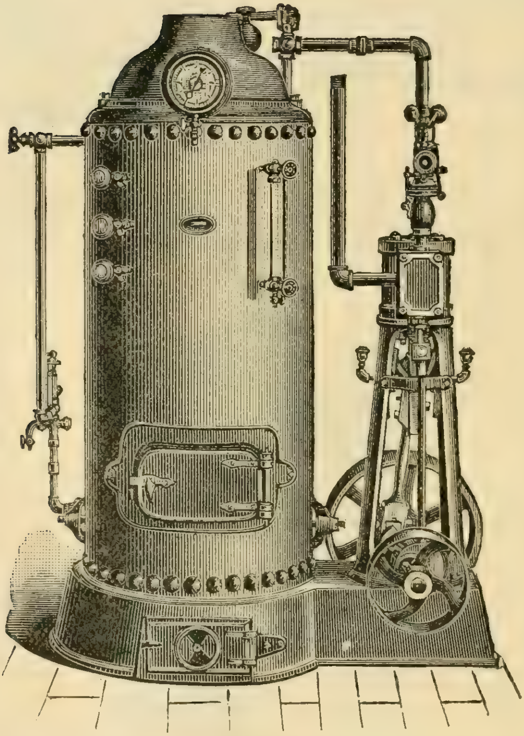
No. 37.

Cut No. 37 represents a cream vat, for storage of cream, either in a cream-gathering or milk-gathering creamery, and is fitted for cold water to cool the cream, or steam to warm in winter.

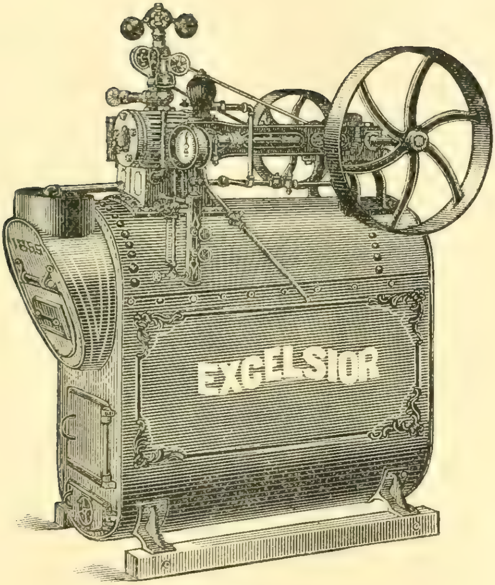


No. 38.

Cut No. 38 is an absolutely essential article in a cream-gathering creamery. It is a cream-carrying can with floating cover, so arranged that the cover always rests on the cream, no matter if it is only one quarter full, thus preventing the slop and agitation of the cream.



No. 39.



No. 40.

Cuts Nos. 39 and 40 represent two types of engines especially adapted to creameries, one vertical the other horizontal.

SOURCES OF FERTILITY AND EXPERIMENTS WITH FERTILIZERS.

One of the questions sometimes asked by middle-aged farmers is this: "Why do we hear so much about fertilizers to-day, while forty years ago almost nothing was heard of either bone fertilizers or of mineral products now used?" This question, put in a variety of ways, opens up the whole field of agricultural history and very largely affects future progress.

I find some very curious articles in the old agricultural papers, curious in the light of to-day, which give an idea of the changes which forty years have brought about.

Before giving the opinion of our own writers I will go back almost a century and give the opinion of an Englishman, William Strickland, who in 1794 traveled through the United States with the sole object of looking up our agricultural resources and methods. In his report to the British Board of Agriculture he says: "The course of cropping in this State (N. Y.) is as follows: First year, maize; second, rye or wheat, succeeded by buckwheat which stands for seed; third, flax, or oats, or a mixed crop; then a repetition of the same thing as long as the land will bear anything, after which it is laid by for old field; or burn the woods, then sow wheat, second rye, then maize four or five years, or as long as it will grow, then lay it by and begin on a fresh woodland. A Dutchman's course on the Mohawk was: First, wheat; second, peas; third, wheat; fourth, oats or flax; fifth, maize. In his father's time the crop used to be twenty bushels of wheat per acre, but he complained much now, that his land only produced ten bushels."

Speaking of manure Strickland says: "Manure is rarely made use of, but what little is collected is given to the maize crop which requires every support that can be given it. Clover is just beginning to be used. The average yield of wheat in Duchess county, which under proper cultivation would be a most productive, as it is a most beautiful county, is sixteen bushels per acre, and it will be found that the average of this State (N. Y.) is superior to that of any other in the Union." This, it is true, is the opinion of an Englishman at a time when the United States had become "sour grapes," but in 1790 Washington wrote to Arthur Young that the average yield of wheat in the country was eight bushels per acre, and added by way of excuse, "In a new country where land is plentiful and cheap, and labor dear and scarce, it is more profitable to till large areas badly than small areas well."

Coming down to a more recent period, we find some very pertinent advice by Judge Buel, who may be considered the pioneer in agricultural journalism in this country. In 1834 he states things very forcibly in the "Albany Cultivator," as follows:

"The method of farming that has heretofore been generally adopted in this country was to cultivate that kind of crop which gave temporarily the most profitable returns, utterly regardless whether by a succession of exhausting crops the soil became impoverished or not. Indeed, it was not till of late years even thought necessary to aid its fertility by such a thing as a rotation of crops or the regular application of manure. The manner was to crop it as long as a particular kind of grain could be made to grow on a given field, and when every particle of fertility was at length removed from the soil, that lot was thrown away as worthless, a new clearing made, and the same bad practice continued."

Again, in 1837, Judge Buel urges the importance of a less exhaustive practice, and says:

"In traveling westward, we have remarked an astonishing recklessness among farmers in regard to their manure, the primary source of all fertility. But few cattle-yards are cleaned in the spring, and many not at all. This applies particularly to the country east of Onondaga; west of that, the great wheat farmers sometimes take a more summary way to disencumber their farms and yards, — they cart their straw to the fields and burn it. . . . How long will it take, under this system, to bring the land down to the standard of worn-out lands?"

Returning to our question, and we may say the reason why we hear so much about fertilizers to-day is, that by continual cropping and neglect to return the substances taken away, the original fertility of the soil has been drawn upon until the supply is reduced below the requirements.

Perhaps we are not careful to remember that our crops are dependent upon what reaches their roots and leaves for the material from which to increase in size. Plants cannot *create* material. If a seed of corn is planted and produces a stock that weighs five pounds, it has done this at the expense of soil and air; and to aid us in remembering this fact, let us look at the composition of some crop.

The past year I planted a field of ensilage corn, which was harvested from *measured* acres and every load weighed, so that the results are as accurate as is possible. Then at harvesting time samples were taken from the field and analyzed in the college laboratory.

Sample stock taken September 22 gave the following results:

Water	79.58	per cent.
Albuminoids	1.22	"
Carbo-hydrates and fat	15.37	"
Fiber	3.07	"
Ash	.76	"

The yield per acre was twenty-two tons, and from the analysis I have computed the following amount of various substances that were taken away from an acre of the land:

Water	35,015.0 lbs.
Albuminoids (containing 86.7 lbs. nitrogen)	537.0 "
Carbo-hydrates (starch, sugar, gum, and fat)	6,763.0 "
Fiber	1,350.0 "
Total ash, 335 lbs., containing—	
Potash	72.0 "
Phosphoric acid	20.2 "
Other ash constituents always over-abundant in the soil	242.8 "

Now it is evident that nothing could have been taken away from the soil except what the analysis shows to have been in the crop, and it is also evident that the whole of the 44,000 pounds must have come from the soil and air, and this brings us to a consideration of the source from whence the plants get the elements which go to make up the crop. Of course the water in the crop comes from the water supplied by nature to all arable soils, and is no tax on the fertility of the soil. Here, then, are seventeen and one half tons of the original twenty-two which cost nothing.

The carbo-hydrates, including starch, sugar, gum, and cellulose and the fiber, are made up of three elements, carbon (or pure charcoal), hydrogen, and oxygen. (The two latter are the gases which unite to form water.) There is in the air a small quantity of a gas called carbonic-acid gas, which supplies all the carbon, which plants make use of, and the hydrogen and oxygen in the carbo-hydrates come from water, so we can set aside the 6,763 pounds of carbo-hydrates and the 1,350 pounds of fiber or cellulose as not in any way exhausting the soil, for the elements which make up these come from the atmosphere. This takes 21½ tons of the 22 produced out of the question of soil exhaustion, and therefore no return need be made for them in fertilizing for another crop. To recapitulate then, we may give the following table showing the source of the various parts :

Water from rainfall		35,015	lbs.
Carbon from air Oxygen from water Hydrogen from water	in carbo-hydrates	8,113	"
Carbon, hydrogen, and oxygen in albuminoids		451	"
Total from air and water		43,579	lbs.
Whole weight of crop		44,000	"
Balance to come from soil		421	lbs.

We are therefore chiefly interested in the composition of this 421 pounds, for this alone can come from the soil; and if chemical analysis can aid us at all in studying the subject, it must do so by showing what this balance is composed of. It is evident that if there are parts of this 421 pounds which are always over-abundant in the soil, then it is useless to cause expense in applying such parts; on the other hand, if certain constituents are invariably lacking in soils which have been cropped, then these must be supplied by manure or chemicals.

The following table will show what the 421 pounds consist of —

Nitrogen (N)	86.7	lbs.
Silica (SiO_3)	122.0	"
Potash (K_2O)	72.0	"
Lime (CaO)	37.0	"
Phosphoric acid (P_2O_5)	20.3	"
Magnesia (MgO)	19.0	"
Sulphuric acid (H_2SO_4)	19.0	"
Soda (Na_2O)	11.0	"
Sulphur (S)	11.0	"
Chlorine (Cl)	23.0	"

With the exception of the 86.7 pounds of nitrogen, the whole of this comes from the soil, for all of it is in the ash of the plant, and, being non-volatile, must be taken up in solution by the roots of the plant.

Are any of these always abundant in the soil? Silica is never needed, as it is over-abundant, though at times the quantity which is soluble may be limited. In most soils lime is very abundant, and yet there are soils to which the addition of lime proves very beneficial, and it is also true that in regions remote from lime-rock the quantity of lime per acre is very small. Magnesia is not always over-abundant, and hence may sometimes prove beneficial. Soda is regarded as not being essential to the growth and perfection of plants in general, but it is nearly always found. Its application as a fertilizer is not especially beneficial as a rule. Sulphur and sulphuric acid are always abundant either in the soil or in the manure applied. Johnson gives the total plant-food in an acre of soil in Scotland, and also the amount required by an acre of barley, and then assuming that all of this food is available (which is not true), he finds that the soil under consideration contains enough —

Lime for	6,138	crops.
Potash for	648	"
Phosphoric acid for	292	"
Sulphuric acid for	288	"
Nitrogen in ammonia for	31	"

In more than ninety-five per cent of all cases it is found that we need consider only three forms of plant-food, *nitrogen*, *phosphoric acid*, and *potash*; in a few cases lime and sulphuric acid, and in still less magnesia and chlorine. Briefly, then, a crop of ensilage corn of twenty-two tons takes away from the soil the following amount of plant-food, which needs looking after:

Nitrogen	86.7	lbs.
Potash	72.0	"
Phosphoric acid	20.3	"

And it becomes a simple question of providing these quantities of available matter, either in stable manure or in chemical fetilizers.

HOW SHALL WE DETERMINE WHAT OUR SOIL NEEDS?

Once it was said have a sample of the soil analyzed by the chemist and see if anything is deficient. When a chemist analyzes a soil he finds the total amount of potash present, and the same with nitrogen and phosphoric acid. It may happen, however, that there is an abundant supply of each of these, and yet the plant may be unable to get at any, for it may be unavailable. Suppose, for example, that I take a bushel of the most barren sand that can be found on the banks of the Merrimack, put it in a furnace and heat it red hot, burning out every trace of organic matter. I will next run pure water through it until I have washed out everything that is soluble, in this way producing a soil as barren as a granite bowlder. If a sample of this soil were sent to a chemist, he would return, no potash, no nitrogen, no phosphoric acid. But I will take another sample and mix with it ground leather chips, powdered feldspar, and powdered Canadian phosphate rock. The same chemist would find an abundance of potash, of nitrogen, and of phosphoric acid, but a plant placed in such a soil would starve as quickly as if hung up in a bottle of chemically pure water, because the food, though there and determined by analysis, is nevertheless totally unavailable and might as well be absent.

This, of course, is an extreme case, but it shows exactly why chemical analysis fails. Another and equally serious difficulty is the fact that no chemist can go into a field prepared for corn, one half fertilized with 500 pounds per acre of commercial fertilizer, the other not so fertilized, both having been just alike previously, and take his samples and determine with certainty which sample came from the fertilized and which from the unfertilized half, because the difference in the actual plant-food is so small a quantity that errors in sampling and errors in analysis will more than equal the plant-food added to the small sample taken.

There is, however, a way to determine what the soil is deficient in, and in my opinion it is the only way of getting at reliable, practical results ; I refer to

FIELD EXPERIMENTS.

It must be said that at present there is no well-established uniform method of field experimentation to guide those wishing to test their soil, and the method I have adopted is without doubt open to objections, but it is capable of giving practical results.

My method has been based upon the dollar standard, for it is this that each farmer finally tests a given fertilizer by. If equal values invested in various fertilizers return equal increase of crop, then one is as good as the other, even if the chemical analysis varies 20 per cent ; and if a given combination costing $1 gives twice as great a return as another costing $1, then the former will be the one to use, for it is in practice better, and it makes very little difference whether a fertilizer is composed of blood, bone, and meat, or crude chemicals, if it persists year after year in returning twice as great an increase of crop as some other brand or manufacture used side by side.

HISTORY OF THE USE OF FERTILIZERS.

Almost without exception the use of various substances as fertilizers has been brought about by some accidental discovery, usually made by practical farmers.

Take by way of illustration that substance which revolutionized English agriculture, bone. Nothing was known of its fertilizing properties previous to 1750. At that time an English farmer saw that where the fragments of bone and horn from a comb and button factory had been deposited in a swamp the grass grew luxuriantly, and this observation led him to try a few loads of this half decomposed bone on his fields. The results were highly satisfactory, and led to the use of bone in large quantities. In 1770 Arthur Young, while making a tour throughout the north of England, saw bones used in the neighborhood of Sheffield. Here is what he wrote about it:

"Bones are a very odd manure, but they find them of great benefit to their clay lands, and they will last twenty years good."

Until 1814 bones were applied either whole or crushed with sledges by hand. At the latter date a bone-mill was constructed which reduced them to a much finer condition than had been previously attained, and it was found that their value was greatly enhanced by this fine grinding.

Just why bones acted as a manure no one knew. Chemists studied the matter, and found bones made up as follows:

100 lbs. raw bone,	30 lbs. animal matter, containing nitrogen (lbs.),			2.5
	70 lbs. mineral or ash,	58 lbs. phosphate of lime	phosphoric acid,	24.0
			34 lbs. lime.	
		12 lbs. other matter.		——
		Total plant-food,		26.5

It was generally believed that the 30 pounds of animal matter were at the bottom of the wonderful results obtained from the use of bone, and this theory was believed until it was discovered that bone-ash, from which every trace of animal matter was removed, was nearly as effective as whole bone. It was finally seen that the phosphoric acid must be the true fertilizing principle.

Take another example. Some time from 1625 to 1650 it is recorded that saltpeter was used on wheat fields, but not until 1825 do we find any well-conducted tests. In 1836 an attempt was made to solve the problem of the effect of saltpeter. Chemically saltpeter is known as nitrate of potash, or it is potash combined with nitric acid, and of course it could not be decided, except by experiment, whether the effect was due to the nitric acid or to the potash. The experiment made by an Englishman in 1836 was this: Equal areas of grass land were watered daily, one with pure water, another with a weak solution of nitric acid, and a third with a weak solution of potash. The result was that both the acid and the potash proved beneficial.

Here was proof that the then exhausted soil of England needed phosphoric acid, potash, and nitrogen, and these three are known as the essential forces of plant-food.

SOURCES OF PLANT-FOOD.

Manure. Farm-yard manure consists of the undigested part of the food, together with such parts of the digested food as are not stored up in the system, or given off in milk, or used up in increase of wool, etc.

In the feeding experiment given in another part of this report will be found the results of an experiment in which 59 per cent of the total nitrogen taken into the stomach with the food was recovered in the solid and liquid manure, 64 per cent of the phosphoric acid was found in the manure, and only 31 per cent of the potash. Now it would be possible to lose much more than this if the liquid excrement was lost or partially lost. We are too apt to look upon manure as being simply valuable on account of the solid part, but this is not true.

An animal weighing one thousand pounds will produce annually ten thousand pounds of urine and twenty thousand pounds of solid manure, and it is a matter of considerable importance to be able to save the ten thousand pounds of liquid.

The average composition of the solid manure, as determined by analyzing six samples, is —

Water	83.060
Phosphoric acid	.163
Potash	.162
Nitrogen	.437

And the composition of the urine of a cow is —

Water	92.13			
Urea	1.85	containing nitrogen,	.850	total, .955 per cent.
Hippurate of potassium	1.65	" "	.105	
		containing potash,	.357	total (K_2O), 1.609 per cent.
Lactate of potassium	1.72	" "	.524	
Bicarbonate of potassium	1.61	" "	.628	
Sulphate of potassium	.36	" "	.100	
Carbonate of magnesium	.47			
Carbonate of lime	.05			
Sodium chloride	.15			
Phosphoric acid	none.			

From these two analyses we may find the amount of plant-food in the yearly excrement of a thousand-pound cow or ox:

	Nitrogen, lbs.	Phosphoric acid, lbs.	Potash, lbs.
20,000 pounds solid contain	87.4	32.4	32.4
10,000 pounds liquid contain	95.5		160.9
30,000 pounds contain	182.9	32.4	193.3

There is actually more value in the urine than in the solid manure, thus the plant-food in the liquid excrement would be valued at $20.75, and in the solid at $16.35, the whole value being $37.10.

The value of the liquid portion is very liable to shrinkage in two ways, one by being allowed to run to waste, the other by allowing fermentation to take place. Fourteen dollars thirty-two cents is the value of the nitrogen in the urine, and it is in the form of urea a very unstable compound, easily decomposed, liberating ammonia gas, which is lost in the air.

Sprengel took fresh urine and analyzed it. He then set aside two samples, one without any addition, the other diluted with an equal bulk of water; and at the end of four weeks each sample was analyzed, giving the following results:

	Fresh.	Fermented, undiluted.	Diluted half with water and fermented.
Urea	4.00	1.00	0.60
Ammonia	.21	.49	1.62
Total nitrogen	2.04	.87	1.61

This illustrates the way in which the loss may occur by fermentation, fifty-seven per cent of the total nitrogen being lost in this case.

Farm-yard manure is a general fertilizer, containing all the elements needed by plants, because it is made up of decomposed plants. It is a fertilizer liable to become deteriorated by exposure to rains or by excessive fermentation. Relatively it contains but little that is directly beneficial to plants, a ton containing only about twenty pounds of actual plant-food, or about the same as one hundred pounds of almost any good commercial fertilizer; but it must be said that in many cases it has an indirect value which its chemical composition fails to show. But this value is not a sure one, it may prove beneficial on one kind of soil and not on another, or different seasons may show more or less of this indirect action; but there can be no doubt that good, well-preserved farm-yard manure is the standard fertilizer, and we need more light respecting its action and the best methods of applying it.

In mentioning the more common sources of plant-food I shall first mention those that contain

PHOSPHORIC ACID.

Bone was the original commercial fertilizer, owing its chief value to the twenty-four per cent of phosphoric acid which it contains when pure.

Until 1839 the only change in the method of using bone was to grind it finer and finer, but in 1839 Liebig suggested the use of sulphuric acid as a means of changing the insoluble condition of the phosphoric acid to a soluble one.

Chemically the action is as follows:

When we speak of phosphoric acid it means phosphorus, a metal, and oxygen, a gas, in combination P_2O_5, but this does not exist in this simple shape in bone; the acid is united with lime or calcium oxide, CaO, three parts of lime and one of the acid, coming into combination as follows: $(CaO)\,3 + P_2O_5 = Ca_3P_2O_8$. This last is insoluble in water, and must therefore be acted upon by the soil before plants can take it into their roots. Liebig knew that sulphuric acid would change this phosphate of lime after the following formula:

$$\overset{\substack{\text{Insoluble}\\\text{calcium}\\\text{phosphate.}}}{Ca_3P_2O_8} + \overset{\text{Sulphuric acid.}}{(H_2SO_4)\,2} = \overset{\text{Superphosphate.}}{CaH_4P_2O_8} + \overset{\text{Gypusm.}}{(CaSO_4)\,2}$$

The superphosphate ($CaH_4P_2O_8$) is soluble in water, and so Liebig concluded that it would prove a valuable method of preparing the bone. In the summer of 1840 this new preparation was tried, and found of great value. In fact, this one suggestion by the great chemist Liebig marks a new epoch in the agriculture of almost the whole world.

In 1843 a new source of phosphoric acid was discovered in Spain. It was a vein of rock, some seven feet wide, containing 34 per cent to 50 per cent of phosphoric acid. The next year this phosphate rock was tried and found valuable. In the United States as early as 1837 it was known that there were rocks in South Carolina containing phosphoric acid, but not until 1868 was much effort made toward utilizing this material. To-day, however, it is said that two thirds of all the phosphoric acid in fertilizers come from South Carolina rock. The rate of development of this industry may be judged by the following statistics:

1868,	total	quantity	mined	6	tons.
1873,	"	"	"	58,760	"
1878,	"	"	"	163,000	"
1883,	"	"	"	332,077	"
1885,	"	"	"	437,856	"

The value of the last-mentioned output was estimated at $2,846,064. Practically the supply, like that of coal and naphtha, is inexhaustible, and yearly the area mined is being enlarged by new beds being discovered, so that we need fear no scarcity of phosphoric acid.

Bone-black is much used, being a waste product from the sugar refinery, where it is used in clarifying the brown syrups from the crude sugar. After a time, however, the bone-black becomes useless as a filter, and is then sold to fertilizer manufacturers, who treat it with acid, producing what is known as dissolved bone-black.

A new source of this same form of plant-food is now being drawn upon. In the Thomas-Gilchrist process of steel production, a slag, containing 19 per cent of phosphoric acid, is produced, and by suitable treatment a German chemist has succeeded in separating this P_2O_5 in the form of "Reverted" phosphate of lime ($Ca_2H_2P_2O_8$), a form supposed to be as good as the superphosphate. It seems that there are vast quantities of this slag produced thus in Germany alone. It is said that 20,000 tons of phosphoric acid have been thrown away annually, and this at the Experiment Station price of six cents per pound would be worth $2,400,000.

Just what may come of this new source is of course unknown, but it is to be hoped that it will materially reduce the expense of fertilizers in the near future.

SOURCES OF POTASH.

Wood ashes have always been used in agriculture, and their value partly depends upon the potash which they contain. Until 1868 we had no other source of potash in the United States. Germany to-day furnishes vast quantities of potash for agricultural purposes. In 1852 an attempt was made at Stassfurt, in Saxony, to sink a shaft to a bed of rock-salt believed to exist somewhere in that vicinity. In 1857 the salt was reached at a depth of 1,100 feet; but before coming to this, several beds of gypsum, potash, and magnesia salts, etc., were passed through. At that time these potash beds were regarded as a nuisance, rendering the mining of the salt more expensive; but about 1860 chemists began to experiment with the idea of utilizing these vast deposits, and in 1861 a factory was established where the crude products of the mines were purified and prepared for market, and in 1883 there were thirty-four factories working up vast quantities of the various salts. It has been supposed that most of these products were prepared expressly for agricultural purposes, but it seems from statistics that only about 15 per cent of the total output of the thirty-four factories is used as fertilizers, the remainder going into a better glass of chemicals to be used in the arts and by various manufactures.

The history of the German or Stassfurt deposit is that an inland sea, much like Great Salt Lake in this country, was gradually dried away until the salts contained in the sea-water were all deposited; and there is no doubt but that ages hence Great Salt Lake will have disappeared, leaving its dissolved soda, potash, and magnesia salts as a source of plant-food for the now fertile prairies when they shall have become exhausted.

The principal forms of the Stassfurt salts as they come from the factory are: Muriate of potash, sulphate of potash, kainet, and krugit, the two latter being mixtures of muriate and sulphate, together with magnesia salts.

SOURCES OF NITROGEN.

The earliest used nitrogenous chemical was saltpeter or nitrate of potash, already mentioned, but its value for the manufacture of gunpowder soon placed it beyond the reach of the farmer. A substitute was found in the early part of the nineteenth century in the form of nitrate of soda, or Chili saltpeter, so called because first brought from Chili.

The first ship-load of this material reached England in 1820, but met with little favor at first. It is now mined and prepared in large quantities, and is extensively used as a source of nitrogen for plants.

In 1836 a new source of nitrogen was brought into notice in England. This was the so-called "gas-liquor," or the water in which illuminating gas was washed, and which contained a considerable quantity of ammonia (NH_3), or the gas from which spirits of hartshorn is made. For a year or two this liquor was used in the liquid form as a fertilizer, and with excellent results. After a time a process of manufacture was adopted by which the ammonia gas was combined with sulphuric acid, giving the stable salt, sulphate of ammonia $(NH_4)2\ SO_4$, which is at the present time one of the most valuable nitrogenous salts used in agriculture. Fish scrap, dried blood, and meat scrap are all sources of nitrogen, and guano, once the chief imported fertilizer of England and America, is now used in considerable quantities as a source of both nitrogen and phosphoric acid.

Table showing sources, cost, and weight of fertilizers :

PHOSPHORIC ACID.

	Plant-food furnished.	Substance.	Per cent of plant-food.	Cost per cwt.	Weight per half-bushel.
Insoluble.	Phosphoric acid. P_2O_5.	Raw bone..................	24	$1.75	
		Bone-black................	34	1.30	38 lbs.
		South Carolina rock.....	34	1.25	52 "
Soluble.	Phosphoric acid. P_2O_5.	Dissolved bone-black...	16	1.40	30 "
		Dissolved S. C. rock.....	16	1.25	30 "
		Dissolved bone..........	16	1.70	
	Reverted P_2O_5.	Thomas-Gilchrist slag...	20	(?)	

POTASH.

Potash.	Wood ashes	9	$0.50	23 lbs.
	Muriate of potash	50	2.25	34 "
	Sulphate of Potash	27		
	High-grade sulph. potash	51	1.75	40 "
	Kainet	12	.75	39 "
	Krugit	8	.75	39 "

NITROGEN.

Nitrogen.	Dried blood	15	$2.00	19 lbs.
	Fish scrap	7.5		
	Bone	2.5	1.75	
	Nitrate of soda	15	2.75	44 "
	Nitrate of potash	13	5.00	
	Sulphate of ammonia	20	3.50	31 "
	Guano	15		

The question that now comes up is, what advantage, if any, is there in the use of the materials mentioned in the above table over the prepared fertilizers?

In the first place, it is well known that in most of the prepared fertilizers there are mixed together certain materials which furnish nitrogen, phosphoric acid, and potash, and if any farmer buys a ton of Bradley's or Bowker's, or any other brand, he gets these three forms of plant-food in a certain ratio to each other, and he cannot change that ratio. He must use it just as it comes; no matter if he is convinced that the nitrogen is an injury to a certain crop, it must go in, for the fertilizer he has bought contains it. This reason alone is sufficient to induce farmers to buy the three forms of plant-food in separate materials, and do the mixing at home in such proportions as experience and experiment have proven best adapted to soil and crop. But there is a still stronger reason existing, because of the lack of a scientific or practical basis upon which fertilizers are compounded.

I will select ten of the best-known fertilizers found in our markets, and will give the results of the latest analyses.

	Nitrogen.	Total phosphoric acid.	Potash.
Bowker's	2.80	11.60	1.25
Crocker's	2.13	10.87	1.29
Chittenden's	4.23	9.60	7.94
Bradley's X L	2.77	12.46	2.86
Mapes's Complete	3.16	12.24	4.06
Soluble Pacific Guano	2.66	12.77	2.33
Bay State (Clark cove)	2.50	13.00	1.98
Stockbridge Corn	4.04	11.62	3.43
Cumberland	2.93	12.20	2.91
Bay State (Tucker's)	3.59	11.31	
Average of the ten	3.08	11.76	2.80

This average may fairly be taken as a representation of the composition of the standard prepared fertilizer, and it certainly is fair to ask if this composition, which seems such a favorite among manufacturers, is based upon any law of science or practice.

In the science of stock-feeding we are taught that experimental investigation has shown that certain proportions of albuminoids and carbo-hydrates are best adapted to the requirements of the animal. In medicine certain combinations of drugs have been found in practice to be beneficial in certain diseases. Now, have fertilizer manufacturers ever based their mixtures on the results of either science or practice? I do not hesitate to say that it is my opinion that the stereotyped chemical composition above given is purely and solely the result of chance. A basis of bone was taken, to this was added some form of potash and then of nitrogen, without regard to the quality required by crops, and I do not believe any manufacturer can honestly say that his combination of nitrogenous and phosphatic materials, with potash salts, is anything more than an accidental one, or governed in part or in the whole by what the older manufacturers have put in the field and against which he must compete in the market. It may be that there are a few exceptions to this, in the case of certain special fertilizers, which may or may not be well proportioned.

In proof of the assertion that the composition of the fertilizers on the market is not based upon the requirements of the plant, let us look at the chemical constituents of the ash of the plant, because it is evident that plants take up from the soil what they need, and must be supplied with these materials in an available form. It is an open question whether or not plants are able to supply themselves with nitrogen, but there is no question as to the phosphoric acid and potash, for they must come from the soil. In the following table I have arranged the relative properties of phosphoric acid and potash, showing the ratio in 100 parts of both.

	Potash.	Phos. acid.
Ensilage corn (Southern), College farm,	78.0 (K_2O)	22.0 (P_2O_5)
“ “ (Northern), “ “	73.0 “	27.0 “
Hay, timothy . . . “ “	81.6 “	18.4 “
Average	77.5 (K_2O)	22.5 (P_2O_5)
Farm-yard manure contains (solid and liquid taken together) . . .	85 (K_2O)	15 (P_2O_5)
Farm-yard manure (solid alone) . .	50 “	50 “
Wood ashes (unleached)	80 “	20 “
Average of two above fertilizers .	20 (K_2O)	80 (P_2O_5)

It is reasonable to suppose that nature has provided growing plants with the power to take up these two forms of plant-food in about the proportions best suited to their wants, and just why a fertilizer intended to feed the plant should exactly reverse the laws of nature, or try to, is a question I have never heard answered. Suppose, for example, that I wish to add to an acre of soil a sufficient quantity of potash and phosphoric acid to produce a crop of 22 tons of ensilage, supposing that all the plant-food is to come from the fertilizer. By analysis it is found that this crop takes away 72 pounds of potash and 20.2 pounds of phosphoric acid. Now if we take an average commercial fertilizer having 2.8 pounds of potash per one hundred pounds, it will require 2,500 pounds, but these 2,500 contain 294 pounds of phosphoric acid and our crop can only use 20.2 pounds. Is this good economy? Would it not be far better to apply some combination furnishing a ratio between these two forms of plant-food more nearly like that found in the plant, as in farm-yard manure or in wood ashes? I fail to see why nature's laws should be set aside to gratify a few manufacturers of fertilizers. But some will say, "This is all theory and chemical analysis." Yes, it is theory, and it is the result of chemical analysis; and it was theory that led Liebig to declare that bone would prove more beneficial if cut up with sulphuric acid, and it was chemical knowledge that enabled him to understand the theory. But in all cases theory must be proven by practice, and there never was yet a case where theory and practice failed to agree if the theory was true; and hence, if practice proves that a fertilizer containing potash and phosphoric acid in the proportion of 20 to 80 is better than one in the ratio of 60 to 40, then our assumption is false and not a theory at all.

EXPERIMENTS WITH FERTILIZERS.

There are two methods of conducting field experiments which give results pointing in different directions: One method is to determine the relative effect of a single form of plant-food, and of combinations of two and three forms; the other is to measure the combined effect of all three of the essential forms of plant-food, varying the proportion and keeping the cost per acre constant. The latter method is more practical in its teachings, as it gives an easy method of measuring the actual crop-producing capacity of fertilizers having their composition varied in certain ways. In either method it is necessary to have the three needed materials in separate substances so that any one can be used alone, if desired, or any combination of two or three may be made.

In my work I have almost always used dissolved bone-black as a source of phosphoric acid, though in several cases the dissolved South Carolina rock has been tried. Muriate of potash is perhaps as good a form of potash as can be used, and sulphate of ammonia furnishes a very reliable source of nitrogen, but there are other sources as good as these.

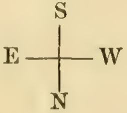
There is an opinion among many farmers that the use of these chemicals is difficult and even dangerous, and I have noticed that the fertilizer manufacturers endeavor to strengthen this opinion in various ways. The fact is, however, that dissolved bone black, muriate of potash, and sulphate of ammonia are each in a perfectly dry and harmless form when bought, and require no treatment except weighing out in proper proportions, and mixing with a shovel or hoe, and this operation is attended with no more serious results than would follow from mixing three kinds of grain for feeding cattle. It does not mean the use of sulphuric acid, or the handling of anything that is dangerous or liable to injure clothing or tools. I would not advise any farmer to buy bone and cut it up with sulphuric acid, because of the danger; but in recommending the use of bone-black, potash, and ammonia there is absolutely no danger or difficulty.

In nearly all of my experiments I have compared the crop produced with a given cost of fertilizer with the crop produced on the same kind of land without any fertilizer, and have credited the increase, if any, to the fertilizer, and in this way have got at figures which show the "increased crop due to one dollar invested in fertilizer."

At the commencement of the season of 1885 a field of six acres was set apart for experimental work. This six acres was the field devoted to sugar beets by Mr. Sanborn in 1879. In 1880 it produced corn, and in 1881 oats, then hay for three years.

The following plan shows how the field was divided off and manured.

PLAN OF EXPERIMENTAL FIELD.

PLAN.	FOURTH ACRE.	THIRD ACRE.	SECOND ACRE.	FIRST ACRE.
26 1 25 2 24 3 23 4 22 5 21 6 20 7 19 8 18 9 17 10 16 11 15 12	No manure. 346 lbs. bone-black. 150 lbs. muriate of potash 56 lbs. sulphate of ammonia. Cost $11.24. 352 lbs. sown bro'd-cast, and 200 lbs. put in hill. 16 rods.	13 loads manure plowed in. 9 loads harrowed in. No fertiliz'r in hill.	13 loads manure plowed in, and 150 lbs. bone-black; 75 lbs. muriate potash. 	20 loads manure plowed in. 9 loads harrowed in. 167 lbs. bone bl'k. 85 lbs. muriate potash.
15 rods.	10 rods.	10 rods.	10 rods.	10 rods.

The first and second acres were manured in the same general way, the first having twice the manure used on the second. The third and fourth acres were planned to show the relative effects of farm-yard manureand chemicals.

No. 3 received 22 loads of manure valued at $33, which is what it would have sold for under the stables.

No. 2 had chemicals mixed as follows:

Dissolved bone-black	346 lbs.
Muriate of potash	150 "
Sulphate of ammonia	56 "
Total	552 lbs.

costing $11, just one third the value of the manure; 352 pounds of this was sown broadcast on the acre, and the remaining 200 pounds put in the hill. The plan was to apply this same amount of chemicals for three consecutive years, and to allow the one dressing of twenty-two loads of manure on No. 3 to stand against the chemicals. This would make the cost at the end of the three years identical, and any gain in crops of one over the other would be an indication of the superiority of that one. Two years of the test have already been completed, and the third will soon commence. That portion of the field marked into small plots, numbering from 1 to 26, has been in full plot experiment, which will be spoken of later.

The table on the following page shows the results of the first year of this experiment on the four acres.

This table shows, among other things, that the largest crop is least profitable, if we accept the theory that one third of the manure is used up by the first crop. The last column gives the cost per bushel of sound corn for manure and fertilizer, plus the labor of applying the same. This cost varies as follows:

1st acre, cost of applying manure and fertilizer,	$3.87
2d acre " " " "	2.06
3d acre " " " "	2.80
4th acre " " " "	.48

The increased value of crop over land having neither manure nor fertilizer, for one dollar invested in fertilizing materials, shows that the more manure we use the less we gain, and on the fourth acre it seems well established that a good crop can be raised on chemical fertilizers, and good interest secured on the investment.

TABLE A.

			Pounds.	No. of loads.	Value of manure			Amount and value of crop produced.							Value of crop for $1 of manure.	Incre'd value of crop over same land with no manure or fertilizer, as sh'wn by small plots.	Ditto per $1 invested in manure and fertilizer.	Cost of manure and labor applying it, per bushel of corn raised.
					½ value of manure.	Whole value fertilizer in hill.	Total cost charged to crop.	Bushels of sound corn.	Bushels of soft corn	Pounds of fodder.	Value of sound corn	Value of soft corn	Value of fodder	Total value.				
1st acre.	Farm-yard man're	Plowed in		20	$15.62		$20.04	129	14	7,976	$38.70	$1.40	$31.80	$71.90	$3.58	$41.92	$2.00	$0.19
		Harrowed in		9														
		Total		29														
	Chemicals in hill.	Bone-black	167			$4.42												
		Muriate of potash	85															
		Total	252															
2d acre..	Yard man're	Plowed in		13	6.87		10.80	103	17½	5,785	30.90	1.75	23.14	55.79	5.16	25.81	2.40	.12½
	Chemicals in hill.	Bone-black	150			3.93												
		Muriate of potash	75															
		Total	225															
3d acre..	Farm-yard man're	Plowed in		13	11.25		11.25	112	16½	4,835	33.60	1.65	19.34	54.59	4.85	24.61	2.18	.12½
		Harrowed in		9														
		Total		22														
4th acre.	Ch'me'ls br'dcast.	Bone-black	220		½ value ch'me'ls br'dcast $3.58		7.66	97	15	5,352	29.10	1.50	21.40	52.00	6.79	22.02	2.89	.08½
		Muriate of potash	96															
		Sulphate of ammonia	36															
		Total	352															
	Ch'me'ls in hill.	Bone-black	126			4.08												
		Muriate of potash	54															
		Sulphate of ammonia	20															
		Total	200															

The second and third acres seem to show that it is more profitable to use two thirds of a dressing of manure, with chemicals in the hill, than to use a full dressing with no chemicals.

The values assigned to the different parts of the crop, as well as to the manure, are almost entirely a matter of opinion — within narrow limits, of course. I have called 80 pounds of corn worth sixty cents, which is certainly none too high. Soft corn I estimate worth ten cents per basket of 34 pounds, and fodder $8 per ton.

Table B shows the treatment and results obtained from the plot experiments, giving the fertilizer used on each plot, the cost per acre, and the amount, condition during growth, yield of sound corn, soft corn, and fodder, per acre, value of entire product, loss or gain from the average of four nothing plots, increased or decreased value per dollar invested in fertilizer, and in the last three columns the per cent composition of the mixture used.

Some of the results shown by this table may be condensed and averaged as follows:

TABLE C.

	Sound corn. Bu.	Soft corn. Bu.	Fodder. Lbs.	Value of increase per $1.00 of fertilizer used.
Four plots with no fertilizer . .	47¼	27⅛	3,266	
Six plots, prepared fertilizers, Bay State, Bowker, Stockbridge, Buffalo	83	23	4,581	$1.55
Three plots, complete chemicals .	97½	32	6,065	2.48
Five plots, P_2O_5 alone . . .	51½	28¼	3,450	.21
Four plots, incomplete chemicals .	95½	41	6,325	2.78
Two plots, incomplete chemicals .	24½	37½	3,582	.45
One acre, 22 loads manure . .	112	16½	4,835	*2.18
One acre, complete chemicals .	97	14⅖	5,352	2.89

Table C shows the relative value of the various fertilizers for an equal cost per acre as applied in each case, and the four plots with no fertilizer were so located that a fair average must have been obtained. This table is condensed from Table B.

There is one point in connection with Table A which should be noticed, namely, the cost of applying the manure and fertilizer per acre.

First acre, cost of applying manure and fertilizer,	$3.87
Second " " " " "	2.06
Third " " " " "	2.80
Fourth " " fertilizer . . .	.48

* Allowing one third of the manure to have been used up by crop.

But in case of comparison of third and fourth it must be remembered that this expense of $0.48 must be incurred every year for three years, while the one expense of $2.80 is to last three years. The result is:

Third acre for three years	$2.80
Fourth " "	1.44
Extra cost of applying manure . . .	$1.36

The last column of Table C is certainly as important as any, and from it we learn that six plots fertilized with some of the best-prepared fertilizers increased the value of the crop only $1.55 for $1 invested, and also side by side, all conditions being alike except in the kind of fertilizers used. Four plots of complete chemicals gave an increase of $2.68 for $1. Now it is a very simple question, and ought to be easily answered: Which had you rather use, the prepared fertilizers and get $1.55, or the chemicals and get $2.68?

But some will say, "These results are on the Connecticut River land and are not safe guides for us who till the hill lands." Very well, my work in this direction has not been confined to the Connecticut River, nor to the three years during which I have had charge of the College farm. When in college I commenced on this subject of fertilizers and, by the kind assistance of Superintendent Sanborn, carried out a series of tests on typical hill land in 1880. This experiment resulted as follows:

TABLE D.

	Pounds of corn.	Pounds of fodder.	Gain of crop per $1 invested.
One acre, no fertilizer of any kind .	1,180	1,400	
One acre with 270 pounds dissolved bone-black	1,870	1,920	$2.10
One acre with 27 pounds dissolved bone-black and 150 pounds muriate potash	2,260	2,760	2.04
One acre with 18 cartloads of barnyard manure	1,840	1,730	

The next series was on the same farm, which, by the way, is in the same latitude as Concord, and therefore near enough to the center of the State to make the results valuable. The land for this series had a half dressing of farm-yard manure harrowed in, and the fertilizer was put in the hill at the rate of $3.20 per acre. The results are compared with rows which had a compost of hen-manure and ashes in the hill. Each lot consisted of one tenth of an acre.

TABLE E.

No. of experiment.	Chemicals used and the amount of each.			Amount of corn harvested, in pounds.		Per cent of soft.	Gain of sound corn over No. 7 with only compost.	Value of increased sound corn for $1 invested.
	Dissolved bone-black.	Muriate of potash.	Sulphate of ammonia.	Sound.	Soft.			
1	5 lbs.	3 lbs.	3 lbs.	246	14	5.3	89½ lbs.	$2.49
2	8½ "		3 "	205	11¾	5.5	48½ "	1.51
3	8 "	3 "	2 "	232	20	7.9	75½ "	2.36
4	8 "	ashes. 11	2 "	218	23	9.5	61½ "	1.92
5	9 "	M. P. 5		204½	30	12.0	48 "	1.50
6	Bones red. with acid.			210	14	6.2	53½ "	1.67
7	Compost.			165	23½	13.0		

The last column represents the gain of sound corn, only estimated at one per cent per pound at husking time. If we should add to this the value of increased fodder, it would bring the average of the six up to $2.40 per one dollar's worth of fertilizer used.

To those who have the annual reports of the State Grange, and who are inclined to doubt the accuracy and reliability of the work done on the College farm, I would respectfully recommend a careful consideration of the results on page 93 of the annual Grange report for 1884, the experiments made by Mr. F. T. Stanton, a prominent member of the grange and a graduate of the agricultural college. His work was to compare chemicals with various prepared fertilizers.

One dollar invested in Pacific guano gave	$1.46
Bradley's	1.72
Stockbridge's	2.16
Chemicals (bone-black, muriate of potash, and sulphate of ammonia)	3.36

The question why chemical produce better results than prepared fertilizers may be answered in two ways:

1. Allowing, for the sake of the argument, that the average composition of the prepared fertilizer is the one best adapted to the requirements of the crop, and the question of availability comes into the account. It is well known that much of the phosphoric acid in these prepared goods is furnished in the form of South Carolina rock, and I am of the firm belief that the phosphoric acid in this rock is not as available, even when cut up with acid, as is the phosphoric acid in bone, and if this is so, then it follows that a fertilizer containing bone phosphate will be superior to one containing rock phosphate. The potash in prepared fertilizers is no doubt in a soluble and available form, but the nitrogen, which represents thirty-eight per cent of the cost of the fertilizer, may or may not be available; it may come from matter not easily decomposed in the soil, or it may be in such a condition that decomposition is all but impossible, thus leaving room for uncertainty. But if a farmer buys sulphate of ammonia guaranteed to contain twenty per cent of nitrogen, or nitrate of soda containing fifteen per cent of nitrogen, he is sure that this nitrogen is available, every ounce of it, for there is no insoluble sulphate of ammonia or insoluble nitrate of soda, and he has changed an uncertainty for a certainty. Muriate of potash and sulphate of potash are each available and wholly soluble, and there can be no risk in their use.

Dissolved bone-black cannot be easily adulterated, and still contain sixteen per cent of soluble P_2O_5, and therefore the entire tendency connected with the use of these materials is to remove doubts and uncertainties, and to place the conditions of their use under the control of the farmer himself rather than in the hands of the manufacturer.

I have already mentioned the fact that chemical analysis fails to justify the existing ratio between the three forms of plant-food in our manufactured fertilizers, and will now try to point out that practice also fails to give any indication that the 3–12–2 favorite prescription, recommended by all manufacturers for all cases, is based upon good grounds.

Table B contains the necessary data for determining whether or

TABLE B.

No. of Plot.	KIND AND AMOUNT OF FERTILIZER USED.													Amount and cost per acre.		Relative per cent of germination.	Relative condition of corn, July 4.	Character of fertilizer.	Condition August 13.	YIELD.					Value of entire produce per acre.	Gain or loss from average of 4 nothing plots.	Increased or decreased value of produce for $1.00 invested.	Per cent of fodder in total product.	Per cent of potash in the Fertilizer.	Per cent P_2O_5 in the Fertilizer.	Per cent nitrogen in the Fertilizer.
	Dissolved bone-black.	Muriate of potash.	Sulphate of ammonia.	Ground bone.	Undissolved bone black.	Krugit	Dissolved South Carolina Rock.	Undissolved So. Carolina Rock.	Ashes.	Bay State Superphosphate.	Buffalo Fertilizer.	Stockbridge Corn Fertilizer.	Bowker Hill and Drill Fertilizer.							Sound Corn.		Soft Corn.		Fodder							
																				On 1-25 acre.	On 1 acre.	On 1-25 acre.	On 1 acre.	Per acre.							
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Bu.	Lbs.	Lbs	Lbs.	Lbs.	Lbs.	$					Lbs.	Bu.	Lbs.	Bu.	Lbs.	$	$	$		K_2O.	P_2O_5.	N.
12	......	......	......	......	......	.....	......	....	....	20	....	....	......	500	10.00	75	Good	Complete	Good	†124½	71½	29½	20	3910	39.09	†9.11	† .91	50.4	2	12	3
11	......	......	......	......	......	......	......	....	....	....	20	....	......	500	10.00	75	Extra	Complete	Good	140½	80¾	35	23⅔	3910	42.22	†12.24	†1.22	47.1	2	12	3
10	13	4½	2½	......	K_2O	......	......	....	...	....	....	....	......	500	10.00	75	Extra	....	Extra	†165	95	53	35¾	6095	56.45	†26.47	†2.64	52.8	11¼	9½	2½
9	13	......	5	......	......	......	......	...	....	....	....	....	......	450	10.00	75	Poor	Incomplete	Very poor	28	16	34	23	2415	16.76	‡13.22	‡1.32	60.9	0	16	5½
8	13	9	....	......	K_2O	......	......	....	....	....	....	....	......	550	10.00	65	Fair	Incomplete	Extra	176½	101½	57	38½	6210	59.14	†29.16	†2.91	51.5	20½	9	0
7	17	¾	4	......	1½	2 p. c.	......	....	....	....	....	....	......	575	10.00	95	Extra	Complete	Good	140	80½	42½	28½	4600	45.40	†15.42	†1.54	50.2	2	12	3
6	......	......	....	......	......	......	......	....	....	....	....	....	......	....	....	100	Very poor	....	Poor	89½	51½	41¼	28	3565	32.51	....	....	52.1	0	0	0
5	......	......	....	......	......	......	.....	....	....	....	....	....	20	500	10.00	90	Extra	Complete	Fair	148	85	27½	18⅔	4255	44.38	†14.40	†1.44	49.2	2	12	3
4	......	......	....	.... .	......	......	......	....	....	....	....	20	......	500	10.00	90	Extra	Complete	Extra	177	101¾	31	21	5290	53.77	†23.79	†2.37	50.4	6	12	3
3	......	......	....	......	......	......	......	....	....	....	20	....	......	500	10.00	90	Extra	Complete	Fair	132	76	41	27⅔	4140	42.12	†12.14	†1.21	48.8	2	12	3
2	......	......	....	......	......	......	......	....	....	20	....	....	......	500	10.00	80	Good	Complete	Good	144	82 4-5	40	27	5980	51.46	†21.48	†2.14	56.5	2	12	3
1	......	9	5	......	......	......	......	....	....	....	....	....	......	350	10.00	80	Poor	Incomplete	Extra	168	96½	58	39¼	7590	63.23	†23.25	†3.32	57.3	32	0	7
15	......	......	....	......	......	......	......	....	1½	....	....	....	......	*37½	10.00	80	Good	Complete	Extra	169½	105½	46½	34	5250	55.05	†25.07	†2.50	49.3	8	2	0
16	......	......	....	......	......	......	......	....	...	....	....	....	......	....	...	95	Very poor	Incomplete	Poor	96	60	42	31	3875	36.60	....	....	52.9	0	0	0
17	......	......	....	......	......	40	......	K_2O	...	....	....	....	......	1000	10.00	35	Very poor	Incomplete	Good	126	78¾	72	52⅓	6250	53.85	†23.87	†2.38	55.8	8	0	0
18	.. ...	17	50 p. c.	K_2O	......	......	......	....	....	....	....	....	......	425	10.00	35	Very poor	....	Poor	53	33⅛	71	52 1-5	4750	34.20	†4.22	† .42	60.5	50	0	0
19	......	......	....	......	.....	......	......	....	....	....	....	....	......	....	....	80	Poor	Incomplete	Poor	41½	26	34	25⅛	2250	19.35	....	....	54.3	0	0	0
20	......	......	....	......	......	......	32	....	...	....	....	....	......	800	10.00	80	Poor	Incomplete	Poor	66½	41½	39	29	2625	25.85	‡4.31	‡ .43	50	0	16	0
21	......	......	....	......	......	......	......	36	....	....	....	....	......	900	10.00	90	Poor	Incomplete	Poor	104	65	40	30	4000	38.50	†8.52	† .85	52.6	0	34	0
22	......	......	....	20	......	......	......	....	....	....	....	....	......	500	10.00	90	Poor	Incomplete	Poor	104	65	37	27	4000	38.20	†8.22	† .82	53.1	0	24	2½
23	......	......	....	......	23	......	......	....	....	....	....	....	......	575	10.00	90	Poor	....	Poor	64½	40⅓	41	30	3125	27.60	‡1.38	‡ .13	54.2	0	34	0
24	......	......	....	......	......	......	......	....	....	....	....	....	......	....	....	95	Poor	Incomplete	Poor	82½	51½	34	25	3375	31.45	....	....	53.6	0	0	0
25	27	......	....	......	......	......	......	....	....	....	....	....	......	675	10.00	90	Fair	....	Poor	73	45½	35	25¾	3500	30.23	†0.25	† .02	56.4	0	15	0
26	6½	9	2½	......	......	......	......	....	....	....	....	....	......	450	10.00	70	Good	Complete	Extra	187	117	44	32⅓	7500	68.33	†38.35	†3.83	56.5	25	5.7	2.6

Corn, 60 cts. per 80 lbs. Soft Corn, 10 cts. per bushel. Fodder, 40 cts. per cwt. * Bushels.

† Gain. ‡ Loss.

not the two per cent of potash is all that is needed. Table F is taken from Table B.

TABLE F.

	PER CENT OF ACTUAL POTASH (K_2O) IN FERTILIZER USED.	Number of plots.	Average yield of fodder per acre.	Per cent of fodder in total crop.	Average bushels sorted corn per acre.	Increased value of crop due to $1 invested in fertilizer.
	No fertilizer of any kind	4	3,266	53.2	47¼	
	Fertilizers with no potash . . .	6	3,277	54.5	45⅔	$0.06*
	Prepared fertilizers, containing —					
	2 per cent of potash	7	4,590	50.3	82½	1.55
Chemicals.	8 " "	2	5,750	52.5	92	2.45
	10 " "	1 A.	5,352	54.9	97	2.89
	11¼ " "	1	6,095	52.8	95	2.64
	20½ " "	1	6,210	51.5	101½	2.91
	25 " "	1	7,500	56.5	117	3.83
	32 " "	1	7,590	57.3	96½	3.32
	50 " "	1	4,750	60.5	33⅛	0.42*

* Loss.

Now if this table shows anything, it most emphatically shows that potash is the controlling element in fertilizers for this soil, and it will be seen that the yield of fodder, yield of corn, and value of crop increases almost directly with the per cent of potash up to 25 per cent. Turning to Table B, it will be seen that this plot was No. 26, and the composition of the combination was —

Phosphoric acid	5.7 per cent.
Potash	25.0 "
Nitrogen	2.6 "

Here the two former constituents are in the ratio of 81 to 19, and a glance at the chemical composition of the crops already given shows that the ratio is very close to what theory and chemistry would indicate.

The following combinations are a few that I have known to give excellent results on the hill farms of New Hampshire, as well as on the Connecticut River lands. They are not given as being in all cases the best, but they may serve as a guide to aid those who wish to experiment for themselves.

Combinations for One Acre.

WHEAT AND CORN.

Dissolved bone-black	325 lbs.
Muriate of potash	100 "
Sulphate of ammonia	75 "

ENSILAGE.

Dissolved bone-black	250 lbs.
Muriate of potash	200 "
Sulphate of ammonia	50 "

POTATOES.

Dissolved bone-black	340 lbs.
Muriate of potash	160 "

OATS.

Dissolved bone-black	300 lbs.
Muriate of potash	150 "
Sulphate of ammonia	25 "

GRASS.

Dissolved bone-black	700 lbs.
Muriate of potash	200 "
Sulphate of ammonia	50 "

ONIONS.

Dissolved bone-black	600 lbs.
Muriate of potash	300 "
Nitrate of soda	100 "

There is need of caution in using any of these in the hill, for if seed comes in contact with the fertilizer there is danger of its being injured. I do not think it advisable to put more than 150 to 200 pounds per acre in the hill with corn or potatoes, the remainder being sown broadcast. With oats, wheat, and grass, of course the whole is sown broadcast; and with the onions, it is probably better to sow the whole of the fertilizer over the entire acre.

I have received more than two hundred letters relative to fertilizers during the past year, and in many of them the questions are asked, "How do you mix these chemicals? Where do you buy them?

What is the cost per hundred pounds?" These are all practical questions, and so I will answer them through this report. We will suppose that I have my chemicals at hand and wish to mix enough for an acre of corn. Referring to the table on page 181, it will be seen that an even half-bushel of dissolved bone-black weighs thirty pounds, and if I measure out eleven half-bushels it will be close enough to the amount required. A clean, tight floor is necessary on which to mix the materials, and on one side of this the eleven half-bushels of bone-black are placed in a pile. Muriate of potash weighs thirty-four pounds per half-bushel, therefore three even half-bushels will give the potash required. This should be placed in a separate pile near the bone-black. Sulphate of ammonia weighs thirty-one pounds per half-bushel, so that two half-bushels and a peck measure full will give about the amount required. This is to be put in a third pile. I am now ready to mix the piles together. Now the relative quantities by measure are 11, 3, and 2½. With a common shovel put down in the center of the floor eleven shovelfuls of the bone-black, three of the potash, and a little less than three of the ammonia; then shovel these over and crush any lumps, throwing up finally into a cone-shaped pile; then throw on eleven more shovelfuls of bone-black, three of potash, and three of ammonia, and mix again, so continuing until the whole is in one pile, which may be shoveled over twice, crushing lumps with a hoe each time. This method gives a very uniform mixture, and the method of measuring is handier than weighing, for all farmers do not have scales adapted to such work.

The chemicals may be bought of any fertilizer manufacturer in Boston or New York, and at about the prices given elsewhere, which of course are subject to fluctuations of the market.

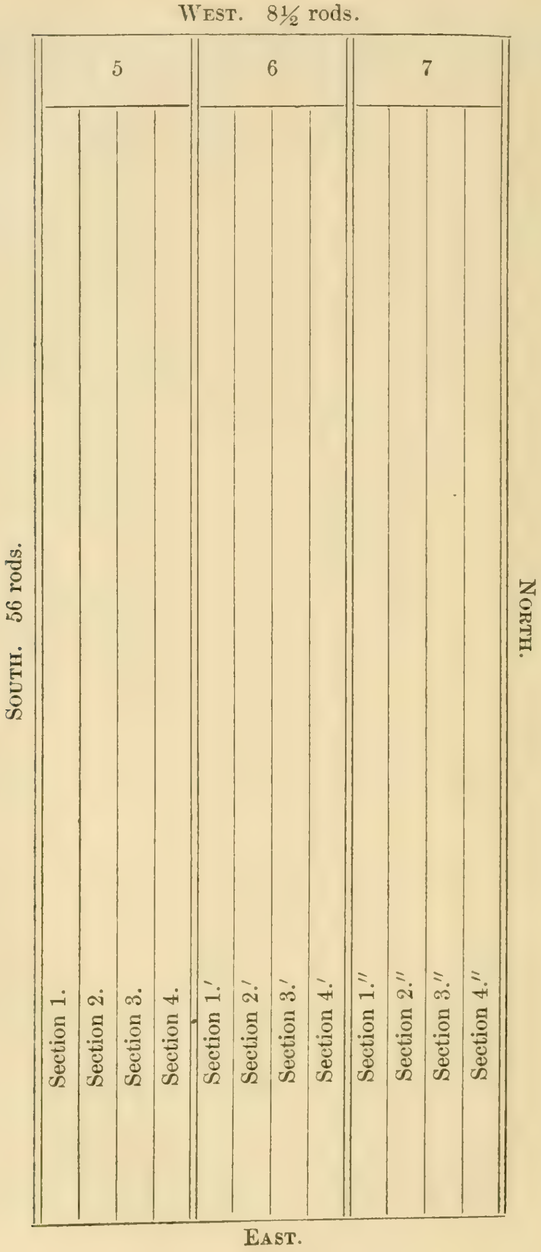
EXPERIMENTS WITH NITROGEN FROM THREE SOURCES, — SULPHATE OF AMMONIA, NITRATE OF SODA, AND DRIED BLOOD.

In the spring of 1886 a three-acre experiment was started, the results of which may prove of value in future work.

It is well known that nitrogen may be bought in several forms, and it becomes a question of some importance to get it in the most economical form.

Three acres of land, which in 1880 produced corn, oats in 1881, hay in 1882, corn and potatoes in 1883, beans in 1884, rye and millet in 1885, was divided into three plots of one acre each, being fifty-six rods long and nearly three wide, numbered 5, 6, and 7.

The following plan will show how the experiment was carried out:


WEST. 8½ rods.
5
6
7
SOUTH. 56 rods.
NORTH.
Section 1.
Section 2.
Section 3.
Section 4.
Section 1.′
Section 2.′
Section 3.′
Section 4.′
Section 1.″
Section 2.″
Section 3.″
Section 4.″
EAST.

Each section consisted of three rows, having 266 hills each, or 800 hills per section, and each acre was made up of four sections, with spaces between each, so that only 3,200 hills were included per acre in the experiment, so that the results are actually one quarter too small per acre, because of these spaces which were not counted. The results are included in two experiments made at the same time, for each acre, taken as a whole, was manured with sixteen loads of farm-yard manure,—No. 5 plowed in in the fall, No. 6 spread on the surface in the fall, and No. 7 spread on the surface in the spring. Each section was fertilized in addition to the manure as follows:

TABLE G.

5th acre.	Section 1, 800 hills,	Dissolved bone-black,	25	lbs.
		Krugit,	33	"
		Sulphate of ammonia,	5	"
	Section 2, 800 hills,	Dissolved bone-black,	25	"
		Krugit,	33	"
		Dried blood,	8½	"
	Section 3, 800 hills,	Dissolved bone-black,	25	"
		Krugit,	33	"
		Nitrate of soda,	7	"
	Section 4, 800 hills,	Dissolved bone-black,	25	"
		Krugit,	33	"
		Sulphate of potash,	10	"
6th acre.	Section 1,′ 800 hills,	Dissolved bone-black,	25	lbs.
		Krugit,	33	"
		Sulphate of potash,	10	"
	Section 2,′ 800 hills,	Dissolved bone-black,	25	"
		Krugit,	33	"
		Nitrate of soda,	7	"
	Section 3,′ 800 hills,	Dissolved bone-black,	25	"
		Krugit,	33	"
		Dried blood,	8½	"
	Section 4,′ 800 hills,	Dissolved bone-black,	25	"
		Krugit,	33	"
		Sulphate of ammonia,	5	"

7th acre.	Section 1,″ 800 hills,	Dissolved bone-black,	25	lbs.
		Krugit,	33	"
		Sulphate of ammonia,	5	"
	Section 2″, 800 hills,	Dissolved bone-black,	25	"
		Krugit,	33	"
		Dried blood,	8½	"
	Section 3″, 800 hills,	Dissolved bone-black,	25	"
		Krugit,	33	"
		Nitrate of soda,	7	"
	Section 4″, 800 hills,	Dissolved bone-black,	25	"
		Krugit,	23	"
		Sulphate of potash,	10	"

In each case one half was sown broadcast and one half in the hill. It will be seen that each acre had one section of each kind; and so if all the sections having sulphate of ammonia, for example, were added together and compared with the sum of all that had nitrate of soda, the difference in the method of manuring the three acres would be overcome and not affect the comparative results.

TABLE H.

Yield per Section of the Three Acres.

		Sound corn.	Soft corn.	Fodder.	Source of nitrogen.
5th acre.	Sect. 1	700 lbs.	270 lbs.	1,460	Sulphate of ammonia.
	" 2	740 "	190 "	1,500	Dried blood.
	" 3	670 "	240 "	1,390	Nitrate of soda.
	" 4	580 "	235 "	1,205	Potash instead of nitrogen.
6th acre.	Sect. 1′	735 lbs.	230 lbs.	1,465	Potash instead of nitrogen.
	" 2′	745 "	250 "	1,645	Nitrate of Soda.
	" 3′	800 "	154 "	1,496	Dried blood.
	" 4′	790 "	120 "	1,460	Sulphate of ammonia.
7th acre.	Sect. 1″	480 lbs.	350 lbs.	1,575	Sulphate of ammonia.
	" 2″	450 "	280 "	1,360	Dried blood.
	" 3″	400 "	202 "	1,118	Nitrate of soda.
	" 4″	360 "	252 "	1,218	Potash instead of nitrogen.

The following re-arrangement of these results shows the effect of the different sources of nitrogen and also of a fertilizer containing nitrogen:

TABLE I.

Nitrogen furnished in Sulphate of Ammonia.

	Sound Corn.	Soft Corn.	Fodder.
Section 1	700	270	1,461
" 4′	790	120	1,460
" 1″	480	350	1,575
Total per 2,400 hills	1,970	740	4,495

Nitrogen furnished in Dried Blood.

	Sound Corn.	Soft Corn.	Fodder.
Section 2	740	190	1,500
" 3′	800	154	1,496
" 2″	450	280	1,360
Total per 2,400 hills	1,990	624	4,356

Nitrogen furnished in Nitrate of Soda.

	Sound Corn.	Soft Corn.	Fodder.
Section 3	670	240	1,390
" 2′	745	250	1,645
" 3″	400	202	1,118
Total	1,815	692	4,153

FERTILIZER CONTAINING NO NITROGEN.

	Sound Corn.	Soft Corn.	Fodder.
Section 4	580	235	1,205
" 1′	735	230	1,565
" 4″	360	252	1,218
Total for 2,400 hills .	1,675	717	3,888

Above total results brought together:

Sulphate of ammonia,	1,970	740	4,495
Dried blood,	1,990	624	4,356
Nitrate of soda,	1,815	692	4,153
No nitrogen,	1,675	717	3,888

There seems to be very little choice between the three forms of nitrogen above used, but it does appear the nitrogen increased the crop.

RELATIVE EFFECT OF MANURE AND CHEMICALS.

I have already spoken of the two acres devoted to a practical test of the relative efficiency of manure and chemicals. I will now tabulate the results of two years of this test:

TABLE J.

	Third Acre, Fertilized with 22 loads of Manure.			Fourth Acre, Fertilized yearly with Bone-black................346 Muriate of Potash.......150 Sulphate of Amonia..... 56		
	1885.	1886.	Total for two yrs.	1885.	1886.	Total for two yrs.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Sound Corn..........	112	83¾	195¾	97	82¾	179¾
Soft Corn............	16½	27	43½	15	24	39
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Fodder..............	4,835	4,435	9,270	5,352	4,927	10,279
Value of Crop.......	$54.59	$45.56	$100.15	$52.00	$46.92	$98.92

During the coming year oats will be sown on these two acres, and this will end the first part of the experiment.

The second acre, which in 1885 was manured with thirteen loads of manure, and a mixture of dissolved bone-black 150, and muriate of potash 75, was divided into four sections and manured as indicated elsewhere in this report.

SULPHATE OF IRON (COPPERAS) AS A FERTILIZER.

It is a well-known fact in physiological botany that plants cannot grow without the presence of some soluble form of iron, and it has been observed in England that sulphate of iron, or copperas, has stimulated crops to which it has been applied, causing a marked increase in yield and in the color and vigor of the plant. I am not aware that it has been experimented with to any great extent in the United States.

In May, 1886, I prepared a half-acre of land, and divided it into two parts. To one of these parts was applied the following:

TABLE K.

	In the Hill.	Broadcast.
Dissolved bone-black . . .	35	70
Muriate of potash . . .	15	30
Sulphate of ammonia . . .	—	10
Sulphate of iron (copperas) .	8	—

The other one fourth acre was treated with the above manures, excepting the copperas. All through the season it was obvious that the copperas was producing a vigorous growth, and at harvest time the following results were obtained :

TABLE L.

	Sound Corn.	Soft Corn.	Fodder.
One fourth acre with chemical manures and copperas . .	820 lbs.	110 lbs.	1000 lbs.
One fourth acre with chemicals, without copperas . . .	670 "	170 "	970 "
Gain or loss from use of copperas	+ 150 lbs.	— 60 lbs.	+ 30 lbs.

In this case the use of thirty-two pounds of copperas per acre increased the yield of sound corn sixteen bushels, or 22 per cent.

It is an easy matter for farmers to try this new form of fertilizer, but in no case should more than fifty pounds per acre be used.

APPLICATION OF FARM-YARD MANURE.

The nature of manure ought to give us some light relative to its application. I have already pointed out that over half the value of the *total* excrement of a cow is in the urine, and from the analysis of urine given in this article it will be seen that over eighty per cent of the nitrogen in the urine exists in the form of urea, which is very unstable, as was shown by Sprengel's experiment, already quoted.

Fermentation of manure means the decomposition of urea and the formation of ammonia gas, which is very liable to be lost in the air. We should expect, then, that any system of management which transfers the manure from the stable to the field with the least possible chance for fermentation, would necessarily involve the least loss of nitrogen. Manure left in loose piles is almost sure to heat and produce ammonia. We know very well the conditions which favor fermentation, and likewise those that prevent it.

Green grass, put in piles, soon heats; but if spread, then it keeps perfectly, parting with only its water. Now if manure is spread out in a thin strata, it will not ferment, and here is the advantage of applying the manure to the ground as soon as possible. But there is a question in this connection which is of great importance. It is this: Does manure spread on the surface of the soil lose an appreciable quantity of ammonia by evaporation? I am very certain that there is no great loss; first, because fresh manure contains very little nitrogen *in the form of ammonia*, and as the production of ammonia depends upon fermentation, there will be very little produced if the manure is spread on the soil; second, because practice has convinced the best and most careful farmers that surface manuring produces better results. The experience of men who act understandingly, and who have experimented with both fall and spring surface manuring, is also in favor of the former.

I have repeatedly seen the effect of the application of manure in November, and, side by side with this, of manure of the same quality applied in May, and in no case have I ever known the former to fail of producing better crops. Market-gardeners, who are the most advanced class of farmers in this country, are almost unanimous in their belief that fall-spread manure produces much better crops.

I have mentioned the fact that the 5th, 6th and 7th acres of our experiment field were manured in three ways:

5th	acre,	fall	manured,	plowed in	16 loads.
6th	"	"	"	surface	16 "
7th	"	spring	"	"	16 "

Table H contains the data for determining the yield per acre, which was as follows:

TABLE K.

	Sound Corn.	Soft Corn.	Fodder.
5th acre — 3,200 hills	2,690	935	5,555
6th acre " "	3,070	754	6,066
7th acre " "	1,690	1,084	5,271

From this it seems certain that fall manuring produces better results than spring, and also that surface manuring is better than plowing in. There is a good reason for this too. In the first place manure must become finely divided to produce the best results. Now any farmer who has ever fall manured on the surface, knows that in the spring the coarse lumps have become broken up and washed into the soil; the rains and melting snow, as they filter through the soil, leave their dissolved plant-food within a few inches of the surface; for it is a fact which has been again and again demonstrated, that water containing ammonia, potash, and phosphoric acid in solution, if filtered through a few inches of almost any kind of soil, will become purified of the substances, leaving them in the soil; and it is a fact demonstrated by the analysis of drainage-water from fields heavily manured, that almost no potash or phosphoric acid is found in such water, but little ammonia, and more of the nitrates; hence in the application of ordinary manures and fertilizers there is little danger of loss by drainage.

THE RESULTS OF A SINGLE EXPERIMENT IN TOP-DRESSING.

In the fall of 1885 a section of 1.3 acres was manured on the surface with 16 loads of manure, and at haying time this was cut and kept separate from an equal area by its side, the weights being recorded, and each area measured.

		Lbs.
Lot A, top-dressed, 16 loads manure on 1.3 acres produced		5,295
Yield per acre	4,073 lbs.	
Lot B, not top-dressed, 1.3 acres		4,825
Yield per acre	3,712 lbs.	——
Gain of hay on 1.3 acres		470
Value of gain		$2.35

This is certainly a small gain for so large an expenditure of manure, but the effect this year (1887) may be greater.

ANALYSIS OF MANURE.

The following complete analyses of manure, made during a feeding experiment, seem to confirm the claim that manure becomes very much enriched in phosphoric acid during the feeding of cotton-seed meal.

The first sample, No. 82, Table L, was taken Dec. 16, at 10 A. M., when the steer had been fed for nearly two weeks on corn meal, hay, and oat straw; and the first feed of cotton-seed was given at that time. The next sample was taken twenty-nine hours after first feed of cotton-seed, and the other samples as indicated in table.

The samples were placed in fruit jars, tightly sealed and kept nearly one year. They do not contain any of the liquid manure, simply the solid excrement; but as no phosphoric acid is found in the urine, it follows that there should have been a decided increase of this compound during several days, and such was the case.

Each sample in the table is figured both on the manure in its natural condition, and also on water-free substance, the latter being comparable in each case. Each determination was made in duplicate by Mr. Hazen, and with closely tallying results. The expense of such analyses as are included in the one table was about $40, hence it will be seen that I cannot indulge in many tests of this kind, so long as I am obliged to go outside the college for a chemist. I regret very much that some arrangement cannot be made whereby necessary analytical work can be done with no expense to the college or farm.

TABLE L.

Analyses of manure samples taken daily, commencing Dec. 16, 1886, from solid excrement of steer No. 2, in record-book.

Date sample taken....................	Dec. 16, 10 A. M.		Dec. 17, 3 P. M.		Dec. 18, 9.30 A. M.		Dec. 19, 10 A. M.		Dec. 20, 6 P. M.		Dec. 21, 9 A. M.	
Number of hours between taking of sample and time of first feed of cotton-seed............	....		29 hours.		47½ hours.		72 hours.		104 hours.		119 hours.	
Sample number......................	82		83		84		85		86		87	
Water..............................	83.06	Water free.	83.41	Water free.	82.80	Water free.	82.65	Water free.	83.21	Water free.	83.13	Water free.
Organic................	15.33	......	14.10	......	15.10	......	15.26	......	14.58	......	14.67	
Ash................................	1.61	9.02	2.49	15.01	2.10	12.21	2.09	12.04	2.21	13.16	2.20	13.04
Nitrogen...........................	.364	2.15	.46	2.77	.443	2.57	.413	2.38	.493	2.93	.452	2.68
P_2O_5	.093	.555	.133	.801	.200	1.162	.216	1.245	.166	.988	.174	1.031
K_2O...................	.112	.661	.207	1.257	.161	.936	.164	.945	.163	.971	.169	1.002

ALLEN HAZEN, *Chemist.*

A recapitulation from the above table will show how the plant-food in the manure varied in the water-free substance:

Sample.	Nitrogen	Phosphoric acid.	Potash.
82	2.15	.555	.661
83	2.77	.801	1.257
84	2.57	1.162	.936
85	2.83	1.245	.945
86	2.93	.988	.971
87	2.68	1.031	1.002

Sample 82, by freezing, broke its jar and was exposed to the air for nearly the whole year, and in this we see proof that the nitrogen of the solid manure is very constant, losing little or nothing by keeping, unless it ferments; the liquid manure is far different, however. Just why the potash doubled the first day and then fell back I cannot say, but it may have been due to an imperfect digestion, or to some disturbance of the system, caused by the change of food. I was a little surprised to find the nitrogen so constant, but it shows that the cotton-seed was well digested, as digested nitrogen all goes out in the urine.

STOCK FEEDING.

If any man intends to buy and operate a steam engine on his farm, the first thing he would do would be to become acquainted with, first, the construction of the machine, its parts, the principles of its construction, etc.; second, he would find out what the engine required; third, he would investigate the various kinds of fuel, such as wood, hard and soft coal, petroleum, gas, etc. Now the same precautions should be taken in the care and management of a dairy cow, and it is my purpose at this meeting to follow this plan, namely:

1. The structure of the animal body, what it is made up of, and the proportions of the various constituents.
2. The requirements of the animal.
3. The various kinds of food, their use, and the economical combining of various foods.

CHEMICAL COMPOSITION.

If we take various parts of the animal body and place it in a dish and surround it by boiling water it will lose weight, and the weight so lost is water; by careful weighing we may determine the per cent of this water. Now if, after all of the water is driven off, we raise the temperature to a red heat, we lose all but a small quantity of ash. The part which burns is called organic, and the ash is termed inorganic.

In the following table a few animal products are mentioned, also the average of the whole body, and following each is given the per cent of water, of organic and inorganic constituents:

	Water.	Organic.	Inorganic.
Milk	87	12.25	.75
Blood . . .	79½	19.70	.80
Bone . . .	22	26.00	52.00
Whole body . .	52	44.50	3.50

At the outset, then, we may disregard the 52 per cent of water and the 3.5 per cent of ash, leaving the 44.5 per cent of organic matter to be examined. Observation teaches us that fat is different from lean meat, that blood has different properties than milk, and so on through all the various parts of the body; but we must call upon the chemist to show the exact difference, and even the chemist fails to account for some of the facts. Chemically there are some twelve elements found in the animal and vegetable organism, including the ash, while the organic or combustible part is chiefly made up of four or five elements — carbon, hydrogen, nitrogen, oxygen, and sulphur. In plants we find the following substances made up entirely of three elements, C, H, O:

Starch ($C_6H_{10}O_5$)
Sugar ($C_{12}H_{22}O_{11}$)
Glucose ($C_6H_{12}O_6$)
Cellulose ($C_6H_{10}O_5$)
Carbo-hydrates.

Lignose
Oxalic acid ($C_2H_2O_4$)
Malic acid ($C_4H_6O_5$)
Tartaric acid ($C_4H_6O_6$)
Citric acid ($C_6H_8O_7$)
Fat and oil ($C_{57}H_{10}O_6$)

All of these compounds are made up of the gases, hydrogen and oxygen, and the solid element carbon.

By some unknown chemical process these carbo-hydrates are united with the nitrogen and sulphur in the sap of the plant, and as a result we have the albuminoids, or the nitrogenous part of the food.

Albumen,
Gluten,
Vegetable caseine,
$C_{144}H_{224}N_{86}O_{44}S_2$ in plants.

Blood and muscle fibrine,
Egg-albumen,
$C_{144}H_{224}N_{86}O_{44}S_2$ in animals.

The following table shows us the constituents both of plants and animals, and as it uses the three terms always applied to three groups of nutrient substances, it may be well to define them:

Carbo-hydrates are vegetable substances, composed of carbon, hydrogen, and oxygen, the last two elements being in the ratio of two of hydrogen to one of oxygen.

Fats are made up of the same three elements, with the hydrogen very much increased in quantity.

Albuminoids, so called because they all resemble albumen or the whites of eggs, are compounds containing nitrogen and sulphur, in addition to the elements of the carbo-hydrates:

The Carbo-hydrates include—

Starch, Sugar, Glucose, Cellulose,	in plants.	Glycogen, Milk-sugar, Muscle-sugar,	in animals.

The Fats include—

Cotton-seed oil, Linseed oil, Olive oil, Palm oil, Cocoanut oil, Peanut oil, Bayberry-tallow, etc.,	in plants.	Tallow, Lard, Neat's-foot oil, Cod-liver oil, Butter, Sperm oil,	in animals.

ALBUMINOIDS.

Vegetable caseine, Gluten, Albumen,	in plants.	Milk caseine, Fibrine, Egg-albumen,	in animals.

We can now take up the composition of the organic part of animals. It is made up chiefly of fat and albuminoids, and a very small quantity of carbo-hydrates, including the sugar of milk.

The following table, taken from Warrington's Chemistry of the Farm, shows the percentage composition of various animals:

	Fat calf.	Half-fat ox.	Fat ox.	Store sheep.	Fat sheep.	Very fat sheep.	Store pig.	Fat pig.
Water	65	56	48½	61	46	37	58	43
Albuminoids . . .	15¾	18	15½	16	13	11½	14½	11½
Fat	15⅓	21	32	20	38	48½	24½	44
Ash	4	5	4	3⅓	3	3	3	2

Taken as a whole, then, we may say that one half of the weight of our farm animals is water, one seventh albuminoids, one quarter fat, one thirtieth ash.

2. Now in order that we may know something of the kind of material that must be added during the growth of an animal, let us start with a calf weighing 100 pounds and compare the various parts with those of an ox weighing 1,500 pounds.

	Calf weighing 100 lbs.	Ox weighing 1,500 lbs.	Difference.
Water . .	65 lbs.	840 lbs.	776 lbs.
Albuminoids .	15½ "	270 "	255½ "
Fat . . .	15½ "	315 "	299½ "
Ash . . .	4 "	75 "	71 "

Here, then, in this difference is seen what must be added to the body of the calf to produce the ox, and it must come from the food and drink of the animal; but the production of flesh, or the increase of live weight, is not all that the food has to do. Food has to produce animal heat. The temperature of the blood of an ox is about 101°, which is much higher than the average temperature of the air, and for the same reason that a pailful of boiling water, if exposed to the air at a temperature of 20° below zero, soon becomes a cake of ice, the body of an animal would soon become of the same temperature as the air, if it were not that the food consumed and digested in some way produces a supply of heat. A hot stove in a cold atmosphere remains hot only so long as fuel is being consumed, and so the animal temperature can only be maintained by the using up of the elements of the food in the system. If a locomotive is standing idle on a track, with steam up, it requires only a very small consumption of fuel, just to supply the heat radiated into the atmosphere, but couple this engine to a long freight train and start on an up grade and large quantities of coal are used up to supply the force necessary for moving the load ; in the same way an ox at hard work requires fifty per cent more food than one at rest in the barn, showing that the production of force is also dependent upon the food digested. Briefly, then, food has three uses in the animal system — flesh-producing, heat-producing, force-producing. In answer, then, to the first two questions previously stated, we may say —

1. The animal body is composed of water, fat, albuminoids, and ash.

2. The animal requires food to repair old and build up new parts and tissues, to produce animal heat, and to develop muscular force.

The supply of animal food comes entirely from the vegetable world, and a brief glance at the composition and growth of a plant will give us an idea of the process. Plants are made up of from ten to fourteen elements; of these five are called the organic elements, and the remainder are the inorganic or ash elements. Starting with a kernel of corn we find in it —

Water			12.0 per cent.
Albuminoids			10.0 "
Carbo-hydrates,	Starch	60.0 per cent,	total, 71.9 "
	Sugar	3.5 "	
	Cellulose (fiber),	5.4 "	
	Gum	3.0 "	
Fat			5.0 "
Ash			1.1 "

When this seed is planted it first absorbs water from the soil, then takes up oxygen from the air, and, by a kind of fermentation, the starch is changed to glucose or sugar, just as the starch in the last year's growth of the maple tree will be changed into sugar the coming spring, and this sugar and the oil or fat furnish the material for the growth of the little corn plant until its roots develop and get into the soil and its first leaf reaches sunlight. From the time that this takes place the plant is dependent upon the earth and air for its supply of food. Now in the air there is present a gas, produced by the burning of wood or coal, and called carbonic-acid gas; it is made up of carbon and oxygen, and the leaves of the little plant absorb this, also the roots take up from the soil water, in which is dissolved nitrogen, phosphoric acid, potash, lime, iron, magnesia, soda, and perhaps other elements, and these are, by the circulation of the sap, carried to the leaf also, and the water is evaporated, leaving the substances which were in solution; but we now come to a process which is solely and exclusively the secret of the vegetable cell; we cannot imitate or infringe upon the rights of the smallest plant. From the absorbed carbonic acid and the substances brought up by the sap, the green leaves of plants, aided by sunlight, have the power of constructing starch. In this one process is illustrated the difference between plants and animals. An ox cannot live upon or make use of this carbonic acid, but can make use of starch; so the plant, by its wonderful chemistry, takes the inorganic substances from soil and air, and first manufactures the carbo-hydrates, then, by adding to these the nitrogen, taken up by the roots, it builds up the albuminoids, and by some process, not well known, the fats are produced.

The physiologist Playfair has well expressed the true importance of plants thus:

"Vegetables are the true makers of flesh; animals only arrange the flesh which they find already formed in plants. If we go further down in the chain we find all food in the *debris* of rocks, for the breaking up of these form the earth, from which it is eliminated by the chemistry of plants."

Knowing, then, the constituents of the animal body, and also the constituents of the food, we are prepared to investigate the subject of foods. We have already seen that there are three requirements which food must fulfill, and it is a very natural question to ask, if all the constituents of the food are equally well adapted to fill these requirements, or whether the albuminoids fill one need, the carbohydrates another, and the fat still another. It must be acknowledged that our best authorities fail to agree on this point, but certain facts are well established. It is well established that no one form of nutrient substance can maintain life. Dalton says:

"Albuminous matters, when taken alone, are no more capable of supporting life indefinitely than the rest." Boussingault fed a duck on pure butter, and at the end of three weeks the duck died of starvation, although its body was full of the fat fed. Dr. Hammond lived for ten days on boiled starch and water, but was seriously debilitated, and obliged to return to a mixed diet.

It is certain then that neither the albuminoids, carbo-hydrates, nor fat alone can sustain life, neither can carbo-hydrates and fat combined, nor albuminoids and fat, and it is doubtful if albuminoids and carbo-hydrates can long produce healthy development, and we are forced to the conclusion that to sustain and properly nourish an animal there are needed all three of the nutrient substances. Again, it is well established that the albuminoids of the body are produced at the expense of the albuminoids of the food, but the source of the fat is a disputed point.

At one time it was supposed that the fat in the food furnished all of the animal fat, but this is now known to be an error. Thus Lawes and Gelbert found that pigs fed on a diet of potatoes, and other foods containing little oil, gave seventy pounds of increased fat for every fifteen pounds of fat supplied in the food.

It is evident that either the albuminoids or the carbo-hydrates must have supplied the elements needed to produce this excess of fat. It is generally believed by physiologists that the albuminoids, by decomposition in the body, may produce fat, and it is maintained that the great bulk of the animal fat is so produced, and on theoretical grounds it is maintained that one hundred pounds of albuminoids are capable of forming a little over fifty-one pounds of fat. Supposing this to be true, and taking the food consumed by the pigs in the above-mentioned experiment, it is found that the albuminoids would produce about thirty pounds of fat, and this, plus the fat in the food, gives only forty-five pounds which could possibly come from the albuminoids and fat, but as seventy pounds are produced it follows that twenty-five pounds must have come from the carbo-hydrates. These figures are taken from Armsby's "Cattle-Feeding," from which the following quotation is taken :

"With our present imperfect knowledge we must regard both proteine [albuminoids] and carbo-hydrates as sources of fat."

The production of heat is another important requirement, and it is probable that the chemical changes which the carbo-hydrates undergo are the chief factors in heat production, but it by no means follows that the fats and albuminoids take no part in this process. Muscular force is most likely the result of the decomposition of both albuminoids and carbo-hydrates,* but it is clearly impossible to conceive of any one of these nutrients being solely devoted to one object in the animal system, as all are mutually dependent upon each other, working together to nourish and build up the mature animal.

We should keep in mind then the following probable results of nutrition, namely: 1. That the flesh or albuminoids in the animal, or in the case above illustrated, the 255½ pounds of albuminoids, must come from the albuminoids of the food. 2. That the 299½ pounds of fat may come from the fat in the food or from the albuminoids, and in some cases at least from the carbo-hydrates. 3. That heat comes from all chemical changes of the food in the system. 4. That force must probably result from the changes of certain carbo-hydrates in the muscular tissue.

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* See Youman's Physiology, p. 456.

Milk is regarded as nature's perfect food, and for young animals this is true; we may then, with reason, expect to find it made up of such forms of substance as are well adapted to the requirements, and we find —

Water	87.0
Albuminoids (caseine)	4.4
Carbo-hydrates (sugar)	4.5
Fat (butter)	3.5
Ash	0.6

The next important question is, how much digestible material does a given animal under given circumstances require? Practical stock-feeding is dependent upon the answer to this question, and it has been answered by the practical, but at the same time scientific work of the German feeders. Their work may be divided into two parts: 1. The experimental determination of the "Maintenance ration," or a ration that will just keep an ox or any other animal in a healthy condition without gain or loss of weight. 2. The determination by chemical analysis of the amount of each nutrient digested.

Armsby gives the result of experiments by Henneberg and Stohmann which showed that an ox weighing 1,000 pounds, if at rest in a stable having a temperature of 68°, required the following ration to keep its bodily weight constant:

Clover hay	2.6 pounds	per day.
Oat straw	14.2 "	
Rape cake	0.6 pound	
Water	55.0 pounds	

In this ration rape-cake is used, but as it is unknown in American feeding it may be replaced by either linseed-meal or gluten-meal, which it closely resembles in composition. The amount of food being thus determined, it is necessary to know its chemical composition and also the digestibility of the three classes of nutrients. The chemical analysis of the above fodder is shown in the following table, and in which the entire composition is given, also the per cent of digestibility and the digestible nutrients in each food.

Total Composition.

One hundred pounds of	Water.	Albuminoids.	Carbo-hydrates.	Fiber.	Fat.
Clover	14.3 lbs.	11.0 lbs.	41.4 lbs.	25.1 lbs.	1.8 lbs.
Oat straw . . .	12.5 "	2.3 "	26.4 "	56.0 "	1.0 "
Linseed . . .	12.0 "	32.7 "	36.4 "	8.8 "	2.3 "

Per cent of Digestibility.

	Albuminoids.	Carbo-hydrates.	Fiber.	Fat.
Clover	55	69	44	56
Oat straw . . .	38	43	61	30
Linseed . . .	84	78		90

Digestible Nutrients.

	Albuminoids.	Carbo-hydrates and fiber.	Fat.
Clover	6.00 lbs.	39.5 lbs.	1.00 lbs.
Oat straw	.87 "	45.5 "	.30 "
Linseed	27.00 "	28.5 "	2.00 "

It is the last part of the table, the digestible composition, that is of use to the stock-feeder, since it is only this part that contributes towards the support of the animal. From this table we can find the amount of digestible material that was actually furnished in the maintenance ration already given :

Daily rations containing Digestible —

	Albuminoids.	Carbo-hydrates and fiber.	Fat.
Clover hay, 2.6 lbs.	0.156 lbs.	1.02 lbs.	0.026 lbs.
Oat straw, 14.2 "	0.123 "	6.45 "	0.042 "
Linseed, 9.5 "	0.135 "	0.14 "	0.01 "
Total,	0.414 "	7.61 "	0.078 "

In the same way the diegestible nutrients required by oxen at work, oxen fattening, cows out of milk, and cows in milk, for growing young stock, and for horses, etc., and the results of these experimental determinations are given to us in the stock-feeding standards, which, though probably imperfect, as indicated by the work of Prof. Sanborn, are nevertheless valuable guides, and aid the stock-feeder in compounding rations from various kinds of coarse and concentrated feeding stuffs.

In all works on stock feeding the so-called " nutritive ratio " is much talked about, and in fact it is a valuable indication of the adaptability of certain foods to various uses. Briefly stated, the nutritive ratio is the number of pounds of carbo-hydrates, plus the fat multiplied by 2.4, to one pound of albuminoids in any fodder under consideration. Take, for example, the clover hay in the German experiment: it contains of digestible material six pounds of albuminoids, 39.5 pounds of carbo-hydrates and one pound of fat. Now, by our rule, we should first multiply the 1 pound of fat by 2.4, and add the result to the 39.5 pounds of carbo-hydrates (this multiplication is done because one pound of fat is supposed to be equal to 2.4 pounds of starch or sugar). In the sample under consideration we find for 6 pounds albuminoids 42 pounds of carbo-hydrates, plus fat, or for 1 pound of the former 7 of the latter.

The feeding standards and the feeding tables usually given show the three forms of nutrients in three columns, but it makes their use much simpler to multiply the fat in each case by 2.4 and add to the carbo-hydrate, and thus reduce the table to two columns, and in the subjoined tables this has been done.

Table showing daily food requirements of different animals under varying circumstances for 1,000 pounds, live weight.

	Digestible.		
	Albuminoids.	Carbo-hydrates, + fat × 2.4.	Nutritive ratio.
Oxen at rest . . .	0.7 lbs.	8.32 lbs.	1 to 12
Oxen at work . . .	2.4 "	14.4 "	1 to 6
Oxen fattening . . .	3.0 "	16.5 "	1 to 5.5
Growing cattle . . .	1.6 "	12.7 "	1 to 8
Cows giving milk . .	2.5 "	13.5 "	1 to 5.4
Horses at work . .	2.8 "	15.5 "	1 to 5.5
Fattening swine . .	4.0 "	24.4 "	1 to 6
Horses in light work . .	1.8 "	12.6 "	1 to 7

Table showing digestible substances in several kinds of animal food per 100 pounds.

	Digestible.			
	Albuminoids.	Carbo-hydrates. + fat × 2.4.	Value per cent.	Nutritive ratio.
English hay . .	5.8 lbs.	43.4 lbs.	$0.64	1 to 8.0
Clover hay . . .	7.0 "	41.0 "	0.69	1 to 5.9
Oat straw . . .	2.1 "	41.7 "	0.48	1 to 17.0
Corn fodder . .	3.2 "	45.8 "	0.57	1 to 14.4
Ensilage (College farm)	1.12 "	11.3 "	0.14	1 to 15.3
Corn meal . . .	9.0 "	71.8 "	1.12	1 to 8.0
Corn and cob meal .	7.7 "	70.3 "	1.03	1 to 9.1
Gluten meal . .	26.0 "	63.9 "	1.86	1 to 2.4
Linseed, new process .	23.2 "	47.1 "	1.50	1 to 2.0
Wheat Bran . .	12.3 "	51.4 "	1.05	1 to 4.1
Middlings . . .	10.0 "	56.0 "	1.01	1 to 5.6
Cotton-seed . .	35.5 "	47.1 "	2.23	1 to 1.3
Oats	9.0 "	54.5 "	0.91	1 to 6.1
Malt sprouts . .	20.8 "	45.8 "	1.23	1 to 2.2
Rye hay . . .	6.0 "	50.0 "	0.65	1 to 8.3

The application of these tables consists in: 1. From the live weight of the animal, and the condition in which it is to be placed, determine the amount of food required. For example, a cow weighing 900 pounds and giving milk, requires 2¼ pounds of digestible albuminoids and 12⅙ pounds of digestible carbo-hydrates and fat. This is directly determined by the first table given. Now the 2d requirement is to select various fodders from the second table and so proportion a ratio from them that we may furnish about this amount of nutrients.

Before the use of ensilage was common, and when the bulky portion or food came from hay and either corn fodder or oat straw, it was a safe rule to supply the animal with an amount of hay equal to one and one half per cent of the live weight, and the same amount of coarse fodder, corn fodder or straw, and then by the addition of grain and some concentrated food, bring up the total nutrients to the required amount. But with ensilage, we may use 5 per cent of the live weight to good advantage.

We will illustrate the methods of compounding rations by a few cases taken from the experiments made at the Agricultural College farm at Hanover.

EXPERIMENT TO DETERMINE RELATIVE VALUE OF GLUTEN MEAL AND LINSEED.

Feb. 21, 1886, two cows, registered Durhams, each weighing 1,050, were selected to test the value of linseed meal and gluten meal, and for a preparatory period of eight days were fed on the following ration, each cow receiving the amount of nutrients shown:

		Albuminoids.	Carbo-hydrates. +fat+2.4	Nutritive Ratio.
Early clover	15 lbs. furnishing	1.050	6.15	
Bean vines	15 " "	0.480	6.87	
Corn and cob meal	8 " "	0.616	5.62	
Total digestible nutrients	furnished	2.146	18.64 =	1 to 8.6
" " "	required	2.620	14.17 =	1 to 5.4

Now it will be seen that these cows were receiving in all 20.8 pounds of nutrients, and by our table they only required 16.8 pounds; but from the nutritive ratio it is seen that there was too little of the albuminoids and too much of the carbo-hydrates. This feed was continued eight days, and during that time A produced 16 lbs. 11 oz. per day, and B produced 16 lbs. 8 oz. per day.

Rations were then changed. A received as follows:

		Digestible		
		Albuminoids.	Carbo-hydrates + fat.	
Clover	15 lbs. furnishing	1.05	6.15	
Bean vines	15 “ “	0.48	6.87	
Corn and cob meal	3 “ “	0.23	2.11	
Linseed	5 “ “	1.16	2.35	
		——	——	Nutritive Ratio.
Total furnished		2.92	17.48	= 1 to 6.
Total required		2.62	14.17	= 1 to 5.4

B received :

Clover	15 lbs. furnishing	1.05	6.15	
Bean vines	15 “ “	0.48	6.87	
Corn and cob meal	3 “ “	0.23	2.11	
Gluten	5 “ “	1.37	3.01	
		——	——	Ratio.
		3.13	18.14	= 1 to 5.7
		2.62	14.17	= 1 to 5.4

A produced 19 lbs. 9 oz. of milk daily; gain daily 2 lbs. 14 oz.
B produced 20 lbs. 8 oz. of milk daily; gain daily 4 lbs.

A and B were then reversed on same ration and produced:

A 22 lbs. 1 oz.; gain over last 2 lbs. 8 oz.
B 21 lbs. 7 oz.; gain over last, 15 ozs.

These results show that in the first ration there was too little of the albuminoids; for although in the second trial A received slightly less digestible material than in the first, yet the ratio being changed from 1 to 8.6 in the first case to 1 to 6 in the second, increased the flow of milk nearly three pounds; and B though receiving slightly more total nutrients, but practically the same, by having her ration changed from a nutritive ratio of 1 to 8.6 to one of 1 to 5.7, increased her daily yield by four pounds.

Now a few words about the cost per day for feeding these cows, charging the food at the following prices: Hay, $14 per ton; bean vines, $7; meal, $20; linseed, $34, and gluten, $25 per ton.

FIRST RATION.

A consumed in 8 days food costing $1.82; cost per day, $0.227.
B consumed in 8 days food costing $1.82; cost per day, $0.227.

Cost per quart of milk, A	$0.0288
Cost per quart of milk, B	0.0292
Average	0.029

SECOND RATION.

A consumed in 8 days food costing $2.18; cost per day, $0.272.
B consumed in 8 days food costing $2.01; cost per day, $0.25.

Cost per quart of milk, A	$0.0294
Cost per quart of milk, B	.0259
Average	.0276

These experiments were continued thirty-five days, with the expectation of determining the relative value of the gluten and linseed. The results may be summed up as follows:

A.

Average cost per quart with linseed	$0.0367
Average cost per quart with gluten	.0289
Difference in favor of gluten	$0.0078

B.

Average cost per quart with linseed	$0.0297
Average cost per quart with gluten	.0279
Difference in favor of gluten	$0.0018

Or, averaging the two, we get—

Cost per quart with linseed	$0.0332
Cost per quart with gluten	.0284
Difference in favor of gluten	$0.0048

During the winter of 1884–5, with the same two cows, I fed the following ration:

		Albuminoids.	Carbo-hydrates, + fat, + 2.4.	Nutritive Ratio.
English hay, 15 lbs.,	furnishing	.87	7.00	
Bean vines, 15 lbs.,	“	.48	6.87	
Oats, 4 lbs., Cotton-seed, 4 lbs.,	“	1.5	3.70	
Total furnished		2.85	17.57 =	1 to 6.2.

Cost of food consumed in fourteen days, $7.03 for two cows.
Cost of food consumed in one day, 25 cts. for each cow.
Cost per quart of milk, $0.0215.

Of course these results are not to be compared with those already given, as they are from experiments made a year earlier, but with the same cows. The difference in time after parturition, however, would have an appreciable effect with milk-flow.

FEEDING EXPERIMENT.

The following experiment was made to determine the actual value of certain kinds of fodder not generally regarded as especially valuable. It was issued in the form of a farm report, and distributed as much as possible.

During the winter of 1884–5, I conducted a series of feeding experiments with milk cows, to determine, if possible, the actual feeding value of some of our feeding stuffs not usually having a well-established market value, and also, among other things, to compare ground oats with corn meal.

The importance of this matter of feeding coarse fodder, such as corn fodder, oat straw, bean vines, etc., is such that I feel warranted in issuing this report, which will be placed in the hands of the agricultural papers in this and other States, thereby enabling them to help place the results before most of the farmers of the State.

Four cows were selected for the experiments, designated by numbers.

No. 9,	weight,	Jan. 1	1,000 lbs.
No. 10,	“	“	1,040 “
No. 13,	“	“	1,080 “
No. 14,	“	“	925 “

These were made up into two lots, as follows:

Lot 1.	No. 14. No. 10.	Combined weight	1,965 lbs.
Lot 2.	No. 13. No. 9.	Combined weight	2,080 “

The German feeding standards were taken as guides in compounding the rations for these animals, but a strict compliance was not attempted, for several reasons.

RATIONS USED.

Lot 1. — Each cow had —	Albuminoids.	Carbo-hydrates and fat.
15 lbs. hay, furnishing	.87 lbs.	7.0 lbs.
15 lbs. corn fodder, furnishing	.16 “	5.6 “
4 lbs. ground oats, 4 lbs. cotton-seed meal, furnish'g	1.50 “	3.7 “
Total digestible nutrients furnished	2.53 “	16.3 “
Total digestible nutrients required per cow	2.50 “	13.5 “

Lot 2. — Each cow had —	Albuminoids.	Carbo-hydrates and fat.
15 lbs. hay, furnishing	.87 lbs.	7.0 lbs.
15 lbs. bean vines, furnishing .	.75 "	5.2 "
4 lbs. ground oats, 4 lbs. cotton-seed meal, } furnish'g	1.50 "	3.7 "
Total digestible nutrients furnished	3.12 "	15.9 "
Total digestible nutrients required per cow	2.65 "	14.3 "

The ratio of albuminoids to carbo-hydrates is, in the ration of lot 1, as 1 to 6.5; ration of lot 2, as 1 to 5.1; nutritive ration required, as 1 to 5.4.

January 15, the rations were reversed, and the lot which had received corn fodder now received bean vines. By this experiment it was hoped to learn something of the relative feeding value of corn fodder and bean vines.

January 30, the food of each lot was changed as follows:

Lot 1. — Each cow had —	Albuminoids.	Carbo-hydrates and fat.
20 lbs. hay, furnishing . . .	1.16 lbs.	9.36 lbs.
8 lbs. cob meal, furnishing . .	.62 "	5.67 "
2 lbs. cotton-seed, furnishing .	.71 "	.95 "
Total digestible nutrients . .	2.49 "	15.98 "
Required by these cows, each .	2.50 "	13.50 "

Lot 2. — Each cow had —	Albuminoids.	Carbo-hydrates and fat.
20 lbs. hay, furnishing . . .	1.16 lbs.	9.36 lbs.
8 lbs. ground oats, furnishing .	.66 "	4.86 "
2 lbs. cotton-seed, furnishing .	.71 "	.95 "
Total digestible nutrients . .	2.53 "	15.17 "
Required by these cows, each .	2.65 "	14.30 "

This last set of rations have the following nutritive ratio: Lot 1, as 1 to 6.4; lot 2, as 1 to 6.

My object in changing to hay without coarse fodder was to enable one to estimate the value of the corn fodder and bean vines as compared with hay, and in the grain part of the ration I hoped to get at the relative value of oats and corn and cob meal.

The points to be looked after are:

1st. The relative value of oats and corn and cob meal (lots 1 and 2, period III).

2d. Relative value of corn fodder and bean vines (lots 1 and 2, periods I and II).

3d. Relative value of corn fodder and hay (lot 1, periods I and III; lot 2, periods II and III).

4th. Relative value of bean vines and hay (lot 2, periods I and III; lot 1, periods II and III).

The following table gives food consumed by each lot in each period of fourteen days, and also the milk production.

FIRST PERIOD (I).

FOOD CONSUMED.		MILK PRODUCED.				
		1st 7 days.	2d 7 days.	Gain or loss.	Total milk, 14 days.	
	Lbs.	Ounces.	Ounces.	Ounces.	Lbs.	Qts.
Lot 1.						
Hay	420	5,230	5,326	+96	659¾	310½
Corn fodder	375					
Ground oats	112					
Cotton-seed	112					
Lot 2.						
Hay	420	5,484	5,564	+80	690½	325
Bean vines	375					
Ground oats	112					
Cotton-seed	112					

SECOND PERIOD (II).

Lot 1.						
Hay,	420	5,238	5,182	—56	651¼	306½
Bean vines	360					
Ground oats	112					
Cotton-seed	112					
Lot 2.						
Hay	420	5,490	5,428	—62	682⅜	321⅛
Corn fodder	368					
Ground oats	112					
Cotton-seed.	112					

THIRD PERIOD (III).

Lot 1.						
Hay	560	4,752	4,617	—35	585⅝	276
Corn and cob meal *	224					
Cotton-seed	56					
Lot 2.						
Hay	560	4,936	5,155	+2.19	630⅔	265 5-7
Ground oats	252					
Cotton-seed	56					

* Corn and cob ground together.

RELATIVE VALUE OF OATS AND CORN MEAL.

From our table we find that for the twenty-eight days immediately preceding January 30, lot 1 produced 617 quarts of milk, lot 2 produced 646 1-8 quarts of milk, showing that lot 2 had a milk producing capacity of 4.7 per cent greater than lot 1, and this on food of equal value. After January 30 the third ration, as already given, was fed for fifteen days with the following results:

KIND AND AMOUNT OF FEED USED IN FIFTEEN DAYS.

	Lot 1.	Lot 2.
Hay	600 lbs.	600 lbs.
Cotton-seed	59 "	59 "
Corn and cob meal . .	235 "	
Ground oats		263 "
Milk produced . . .	296 qts.	318 qts.

But in the previous experiments lot 2 was shown to produce 4.7 per cent more milk than lot 1 on equal food, and therefore if this ration with ground oats was of just the same nutritive value as the one with corn and cob meal, then lot 2 should have given 310 quarts, or 4.7 per cent more than the 296 quarts given by lot 1; but actually they gave 318 quarts, and as the only difference in the feed was the substitution of 263 pounds of oats for 235 pounds of meal, it follows that the oats not only replaced the meal, but gave an increase of 8 quarts of milk, which at 3½ cents per quart was worth 28 cents, so that the 263 pounds of oats equalled in value the 235 pounds of meal, plus 28 cents. Calling the meal 90 cents per hundred pounds, we get 263 lbs. oats = \$2.12 + 28 = \$2.40, or 100lbs. oats = \$0.91.

RELATIVE VALUE OF CORN FODDER AND BEAN VINES.

To make the necessary comparisons we must take the market value of all the materials fed, except those to be compared, and in this the following prices were used: Oats, 91 cents per cwt.; hay, 60 cents per cwt.; cotton-seed, \$1.40 per cwt.; corn and cob meal, 90 cents per cwt.

There is another factor which other experiments, going on at the same time with these, showed to have an appreciable effect on milk production: it is the change of temperature in the stable. As an average result of many observations, I found that a falling of 1° in the temperature of the stable caused a loss of 1.2 ounces of milk daily from cows averaging twelve quarts per day. We are now in shape to study the table given.

LOT 1 PRODUCED IN FOURTEEN DAYS

On corn fodder, at a stable temperature of 46°, 310½ quarts; on bean vines, at a stable temperature of 37°, 306½ quarts.

LOT 2 PRODUCED IN FOURTEEN DAYS

On bean vines, at a stable temperature of 46°, 325 quarts; on corn fodder, at a stable temperature of 37°, 321 quarts.

Applying the correction for temperature and bringing the yield at 37° up to what it would have been at 46°, or 9 quarts additional for each lot during 14 days, and we get —

Corn-fodder ration,	Lot 1,	310.5 qts.	Total, 640.5 qts.
	2,	330.0 "	
Bean-vine ration,	Lot 1,	315.5 "	Total, 640.5 qts.
	2,	325.0 "	

Thus showing the value of the corn fodder and the bean vines to be identical for milk production.

RELATIVE VALUE OF CORN FODDER AND HAY.

By comparing periods I and III we find the following value of food consumed in fourteen days:

		Period I.	Period III.	Difference.
Lot 1.	Hay . .	$2.52	$3.36	$0.84
	Grain . .	2.58	2.80	.22
Total difference				$1.06

This difference of $1.06 represents the excess of the cost of hay and grain in III over I. Now if the two rations had produced the same amount of milk, then this $1.06 would have represented the value of the 375 pounds of corn fodder used in I, but as a fact it is seen in the table that in period I, at a stable temperature of 46°, 34½ more quarts of milk were produced than in III, at a temperature of 34°; but if we increase the product of III by the amount of loss due to the difference of temperature, this excess of 34½ quarts is reduced to 23 quarts, which at 3½ cents per quart equals 81 cents, and it is evident that the 375 pounds of corn fodder not only took the place of the hay and grain in III, valued at $1.06, but that it also should be credited with an increased product valued at 81 cents, so that 375 corn fodder = $1.06 + .81 or $1.87, or 100 corn fodder =

$0.50 or $10 per ton. Now take lot 2 and follow the same method of valuation:

VALUE OF FOOD CONSUMED.

		Period II.	Period III.	Difference.
Lot 2.	Hay	$2.52	$3.36	$0.84
	Grain	2.58	3.07	.49
Total difference				$1.33

which represents the value of food in III, which took the place of the 368 pounds of corn fodder in II, but period II produced 23.4 quarts of milk more than III, and the stable temperature was 37° for the former, 34° for the latter; correcting for this difference of temperature, and we find 20½ quarts to the credit of period II, valued at 71 cents, so that the entire efficiency of the 368 pounds of corn fodder is represented by $1.33 + .71, or $2.04; 368 pounds = $2.04; 100 pounds = $0.55 2-5, or one ton of corn fodder = $11.08.

Taking lot 2, periods I and III, and we can get similar figures showing the value of bean vines. Thus:

VALUE OF FOOD CONSUMED.

		Period I.	Period III.	Difference.
Lot 2.	Hay	$2.52	$3.36	$0.84
	Grain	2.58	3.07	0.49
Total difference				$1.33

From the table we see that lot 2 in period I at a temperature of 46° produced 30 quarts more than in period III at 34°. Correcting for temperature and this becomes reduced to 20 quarts, worth 70 cents; therefore 375 pounds of bean vines = $1.33 + .70 = $2.03, or one ton $10.80.

Taking lot 1, periods II and III, we get —

VALUE OF FOOD CONSUMED.

		Period II.	Period III.	Difference.
Lot 1.	Hay	$2.52	$3.36	$0.84
	Grain	2.58	2.80	0.22
Total difference				$1.06

Excess of milk in period II over III, 30½ quarts; corrected for temperature = 27½, valued $0.96; 360 pounds bean vines = $1.06 + .96 or $2.02, or one ton bean vines valued $11.20.

Bringing all of these results together, and we find the following values based on market price of hay and grain, namely:

Hay		$12.00 per ton.	
Cotton-seed		1.40 " cwt.	
Corn meal		.90 " "	
Oats		.91 " "	
Corn fodder	Lot 1	$10.00 per ton	av. $10.54
	Lot 2	11.08 " "	
Bean vines	Lot 2	10.80 " "	av. $11.00
	Lot 1	11.20 " "	

By the aid of these figures we can determine the cost of food to produce a quart of milk:

Lot 1.

	Period I.	Period II.	Period III.
Value of food consumed	$6.98	$6.90	$6.16
Milk produced, quarts	$310\frac{1}{2}$	$306\frac{1}{2}$	276
Cost per quart	.0224	.0225	.0223

Lot 2.

Value of food consumed	$6.98	$6.94	$6.43
Milk produced, quarts	325	$321\frac{1}{8}$	$296\frac{5}{7}$
Cost per quart	.0215	.0216	.0216

I have been surprised by these results to get so high a value from corn fodder, and especially to find bean vines, which many regard as worthless except for sheep, so effective in a ration, and there was less waste in feeding the bean vines than in corn fodder. Another important point is this: Oats cannot be profitably fed to cows when selling in the market for 40 to 50 cents per bushel; or, to state the same thing another way, they are worth only 29 cents per bushel for cows, and therefore it is more profitable to sell the oats for horses, and buy corn meal or some concentrated food.

FEEDING EXPERIMENT WITH GLUTEN MEAL.

About February 1, 1887, the Chicago Sugar Refining Company sent me a ton of gluten meal for examination and to experiment with. The analysis is given in the article on gluten meal. At that time there were no cows in suitable shape for experimental work, and at my request Mr. Allen Hazen, of Hartford, Vt., undertook an experiment with the gluten in comparison with cotton-seed meal. Mr. Hazen was doing my chemical work, analyzing manure, etc., and as he guaranteed to make analyses of the milk to determine, if possible, the effect upon quality, I readily fell in with the idea of his conducting the test. The cows experimented on were all registered Jerseys, designated by number and name as follows:

Number.	Name.	Number in herd book.	Age.	Dropped last calf.
1	Snowdrop . .	15,352	5 yrs. 4 mo.	Aug. 11, 1886.
2	Laura	40,680	5 " 5 "	Sept. 20, 1886.
3	Lisetta . . .	19,718	3 " 10 "	Aug. 21, 1886.
4	Silva	23,832	3 " 2 "	Oct. 25, 1886.

The experiment was not a scientific one, inasmuch as only the grain was weighed, the hay being fed *ad libitum.* At the commencement of the experiment Nos. 1 and 2 were fed with hay, plus cotton-seed meal, 3 pounds, and corn and cob meal 4 pounds. Nos. 3 and 4, gluten 3 pounds, corn and cob meal 4 pounds.

Previous to this feed the milk of the cows on cotton-seed meal and corn meal had been determined by Mr. Hazen, and in the table given below the average daily yield from January 18–25 represents this. The next period, February 10–16, was a preparatory one, to get each cow accustomed to her food; then come the ten days, February 17–26, and from February 26–28 the food was reversed. The next ten days, March 1–10, furnish the test.

Number of cow.	1	2	3	4
Date.	Daily average product of milk.			
January 18–25 . . .	13.7	13.1	13.1	15.9
February 10–13 . . .	14.1	15.0	13.7	16.1
February 14–16 . . .	13.7	14.8	13.1	15.6
Average for preparatory period	13.9	14.9	13.4	15.8

Period I — Nos. 1 and 2, cotton-seed; Nos. 3 and 4, gluten.

Number of cow.	1	2	3	4
Date.	Daily average product of milk.			
February 17–21	13.9	15.9	13.5	17.0
February 22–26	14.3	15.3	13.1	17.0
Average	14.1	15.6	13.3	17.0
Per cent of increase daily,	3.1		3.7	

Period II — Nos. 1 and 2, gluten; Nos. 3 and 4, cotton-seed.

Number of cow.	1	2	3	4
Date.	Daily average product of milk.			
February 27–28	13.9	14.5	13.4	16.2
March 1–5	14.2	13.6	13.6	16.0
March 6–10	14.5	12.9	13.6	15.9
Average	14.3	13.3	13.6	16.0
Per cent of loss daily,	3.7		2.3	

Average milk during preparatory period . . .	14.34
" " from cotton-seed meal . . .	14.76
" " from gluten	14.40

Gain in favor of cotton-seed over gluten, 2.5 per cent in quantity daily.

ANALYSES OF MILK.

Number of cow.	1	2	3*	4*
Water, February 25	84.48	83.83	84.75	85.12
Fat, "	5.47	6.00	5.39	4.92
Other solids, "	10.05	10.17	9.86	9.96
Number of cow.	1*	2*	3	4
Water, March 9	84.29	83.80	83.82	84.94
Fat, "	5.31	5.63	5.55	4.78
Other solids, "	10.40	10.57	10.63	10.28

* Gluten in feed producing this milk.

Average fat in milk from gluten . .	5.31	per cent.
" " " cotton-seed .	5.36	"

Thus it appears that the cotton-seed produced a slight excess of milk, with a very little increase of fat, but it must be remembered that the gluten costs 15 per cent less than the cotton-seed, hence there can be no doubt but the gluten is the more economical of the two.

I am now conducting tests with this feed, the results of which will be given later, but I feel no hesitation in recommending farmers to thoroughly test this form of feed, for, as will be seen by reading the process of manufacture, it contains nothing harmful and must be very nutritious.

From the chemical composition we should expect the cotton-seed to produce much better results, as the following comparison will show:

	Cotton-seed.	Gluten.
Water	9.06	10.35
Albuminoids	42.50	29.09
Carbo-hydrates . . .	22.12	49.51
Fat	14.58	1.50
Fiber	4.24	8.70
Ash	7.50	0.80

FEEDING EXPERIMENT

TO DETERMINE AMOUNT AND VALUE OF MANURE PRODUCED FROM KNOWN QUANTITIES OF HAY.

In August, 1885, an experiment was planned with the especial purpose of determining something of the actual value of the manure produced from known quantities of food. A bull 14 months old was taken for this work, and was fed for a preliminary and preparatory period on the same food as was to be used, — timothy hay having the composition given in the subjoined table, oats cut when in the milk and cured for hay, and wheat bran, the composition of the two latter being also given in the same table.

The preparatory feeding was commenced July 10, on a ratio of

Hay, 10 lbs. Oat hay, 10 lbs. Bran, 2 lbs.

This feed continued five days; at the end of this time, August 15, the bull weighed 795 pounds. It was believed that this period must have been sufficiently long to get the full effect of the ration, and the next five days were devoted to an exact feeding experiment, the details of which are given in the table.

The object in view was to know exactly how many pounds of food were consumed, how much water drank, also the exact chemical composition of the food, so that the total quantity of the various constituents actually taken into the system could be known. Then all manure, both solid and liquid, was carefully saved and weighed, the method being to bed with a known amount of sawdust, the composition of which was known, enough being used to absorb all liquids. The manure was then sampled and analyzed, and the elements contained in the sawdust taken out, which would show the elements of the food which appeared in the manure.

This I regard as a most important experiment, for it gives us some idea of the manurial value actually obtained from certain food, and if the teachings of this one test show anything, they most emphatically show the false teachings of the tables prepared by Lawes & Gelbert, and quoted by every writer since first published.

The second period, from August 20 to August 31, was an exact continuation of the first, with the amount of food varied slightly.

TABLE A.

Showing food consumed, water drank, manure produced, and gain (in pounds).

DATE.	Period.	Live weight.	Amount consumed.				Value of food.	Daily.					Food unconsum'd.	Dry substance per pound of gain.	Per cent of water to total food.
			Hay.	Oat hay.	Bran.	Water.		Gain.	Water drank.	Air dry food.	Dry substance.	Manure.			
August 15.......		795													
August 20.......	I	805	50	60	10	244	$0.82	2.00	49	23	17.5	40	5	8.7	75.7
August 31.......	II	845	110	220	22	577	2.31	3.63	52½	28	20.2	42	45	5.5	73.6

TABLE B.

Showing various constituents of food consumed in each period (in pounds).

PERIOD I — FIVE DAYS.

FOOD.	Amount.	Water.	Albuminoids.	Carbo-hydrates.	Fat.	Fiber.	Total ash.	Nitrogen.	Phosphoric acid.	Potash.
Timothy hay........	50	6.63	3.500	22.01	1.61	14.10	2.14	0.560	0.087	0.390
Oat hay..............	60	20.53	4.080	17.18	2.46	13.63	2.09	0.652	0.084	0.306
Bran	10	1.13	1.060	5.53	0.44	1.23	0.60	0.170	0.175	0.053
Total	120	28.29	8.640	44.72	4.51	28.96	4.83	1.382	0.346	0.749
Left unconsumed...	5	.87	0.066	2.09	0.04	1.65	0.25	0.010	0.009	0.022
Balance taken into system	115	27.42	8.574	42.63	4.47	27.31	4.58	1.372	0.337	0.727
Water drank........	244	244.00								
Total water*....	....	271.42								
Manure †	200	165.00	......	......	......	......	4.80	0.900	0.220	0.240

PERIOD II — ELEVEN DAYS.

Timothy hay........	110	14.59	7.70	48.42	3.55	31.00	4.70	1.230	0.192	0.858
Oat hay	220	75.30	14.97	63.00	9.04	50.00	7.65	2.390	0.308	1.122
Bran	22	2.50	2.34	12.16	0.96	2.70	1.32	0.375	0.385	0.116
Total	352	92.39	25.02	123.58	13.55	83.70	13.67	3.995	0.885	2.096
Left unconsumed...	45	7.87	0.59	18.82	0.35	14.80	2.26	0.095	0.081	0.198
Balance taken into system	307	84.52	24.43	104.76	13.20	68.90	11.41	3.900	0.804	1.898
Water drank........	577	577.00								
Total water *....	....	661.52								
Manure †	462	381.15	......	......	......	......	10.16	2.079	0.508	0.554

* This means water in food and water drank.

† Solid and liquid, obtained by subtracting sawdust used and bedding.

Table C.

Showing composition of food used in experiment in feeding to determine manurial value of food.

	Water.	Fiber.	Albuminoids.	Carbo-hydrates.	Fat.	Total ash.	Nitrogen.	Phosphoric acid.	Potash.
Timothy hay.............	13.27	25.20	7.00	44.02	3.23	4.28		0.175	0.78
Oat hay....................	34.23	22.73	6.81	28.64	4.11	3.48		0.14	0.51
Wheat bran..............	11.37	12.28	10.66	55.30	4.38	6.01		1.75	0.53
Waste unconsumed	17.49	32.90	1.32	41.84	0.79	5.04		0.18	0.44
Manure and sawdust.....	78.00					2.20	0.46	0.10	0.11
Sawdust..................	44.39					1.00	0.16		
Manure alone............	82.50					2.40	0.45	0.11	0.12

Table A shows that during the first period the bull consumed daily 23 pounds of food containing 17½ pounds of water-free substance; in the second period he consumed 28 pounds daily, containing 20½ pounds of water-free substance. The column showing pounds of dry substance per pound of gain is the one of most importance to the feeder, as it shows how much food is required per pound of gain. It required only 5.5 pounds of dry substance per pound of gain in the second period, against 8.7 pounds in the first period. The per cent of water in the total food and drink taken into the system is an important matter.

Lawes and Gelbert give the proportion as 80 of water to 20 of dry substance. I have found in this experiment that during the first and second periods the animal took in solids and liquids in the following proportion:

First period . . . . 75.7 water to 24.3 solids.
Second period . . . . 73.6 " 26.4 "

Average of the two . . 74.6 water to 25.4 solids.

Table B bears directly on the subject of manure produced from a given amount of food. It seems that the whole of the total ash in the food during the first period appears in the manure, but the plant-food of the ash suffers serious loss in some unaccountable way.

The following tabular statement will show the whole condensed in small space:

PER CENT OF TOTAL NITROGEN, PHOSPHORIC ACID, AND POTASH IN FOOD RECOVERED IN MANURE.

	First period.	Second period.	Average.
Nitrogen,	65 per cent.	53 per cent.	59 per cent.
Phosphoric acid,	65 "	63 "	64 "
Potash,	33 "	29 "	31 "
Total ash,	104 "	89 "	96 "

I am well aware that in the carefully conducted scientific feeding experiment, in which the animal experimented upon is so placed in an absolutely tight feeding stall that loss is impossible, that nearly the whole of the elements taken into the system are again thrown off and formed in the excrements; but it must be remembered that such conditions are not realized in farming, and still further, it must be remembered that in my work I have taken more than ordinary care, using a quantity of sawdust, more than enough to absorb all liquids, and hence I believe that I saved considerably more of the manurial value of the food consumed than is common in practice. The most unaccountable loss is that of potash; where two thirds of the total potash can have disappeared is more than I can even guess. Potash is the least abundant of either of the three in the system, and therefore less could have been used upon the increased growth.

I expected less nitrogen and phosphoric acid in the manure than in the food, for the animal was increasing in weight, and nitrogen would be required to build up the growing muscles, etc., also phosphoric acid for the bones.

So far as this one experiment goes, it seems that our farm-yard manure is not to be measured directly by and in proportion to the amount and kind of food consumed.

AMOUNT OF MANURE PRODUCED FROM A GIVEN AMOUNT OF FOOD.

In the first period 17.5 lbs. of dry substance consumed daily produced 40 lbs. of manure and urine; in the second period 20.2 pounds of dry substance produced 42 pounds, or —

Period I, 100 lbs. dry substance produce 228 lbs. manure.
Period II, 100 lbs. dry substance produce 208 lbs. manure.

Average of both periods . . . 218 lbs.

The following results represent the investigations of three noted agricultural investigators:

Leconteux,	100 lbs. dry substance produce	250 lbs. manure.
Thaer,	100 lbs. dry substance produce	230 lbs. manure.
Boussingault,	100 lbs. dry substance produce	210 lbs. manure.
Average of the three		230 lbs.

These figures enable us to get some idea of the amount of manure which a ton of hay will produce; a ton of hay contains about 250 lbs. of water and 1,750 lbs. of dry substance, and this multiplied by the factor found by the experiment will give 3,815 pounds as the amount of solid and liquid manure which a ton of hay will produce provided all the liquid is saved; but as it is common to measure manure by the cord rather than by the pound or ton, I will try to give some figures for the weight of a cord of average manure. Gregory says: "A cord of average stable manure will average in weight about 4,500 pounds." Waring has the following in his "Book of the Farm": "As stable manure in towns is sold by the cord, I have caused a well-trodden cartload of good livery stable manure . . . to be weighed and I find a cord of this manure to weigh 7,080 pounds."

It is a well-known fact that livery stable or horse manure is lighter than manure from cows and oxen, and I am certain that a cord of unfermented cow manure would weigh from three to four tons, and if this is so, the manure from a ton of hay would amount very close to one half cord, which, with the addition of the litter, etc., might come very close to three fourths of a cord in bulk.

VALUE OF THE MANURE PRODUCED IN THE FEEDING EXPERIMENT.

If we call the nitrogen in farm-yard manure 15 cents per pound, the phosphoric acid 7 cents, and the potash 4 cents, we can compute the actual value of the manure from the data in Table B.

During the two periods covering sixteen days there were produced 662 pounds of manure containing of —

Nitrogen	(lbs.)	2.970	@ 15c.	$0.445
Phosphoric acid	"	.728	@ 07c.	.051
Potash	"	.794	@ 04c.	.032
Total value of plant-food in manure . . .				$0.528
Total value of food consumed (Table A) . .				3.13

Or, in other words, when we are feeding oat hay, herd's-grass, and wheat bran, we may regard the value of the manure as one sixth of the market cost of the food.

ACTUAL VALUE OF THIS MANURE AS SHOWN BY ITS EFFECT ON CROPS.

The manure produced in August (while this experiment was going on) was packed into barrels and stored until May 22, a period of nine months.

In August, 1885, the weight of manure and sawdust was 533 pounds (not all recorded in Table A was saved). May 22, 1886, it weighed 420 pounds, a shrinkage of 113 pounds, or 21 per cent. It was in very fair condition and was used in the hill and broadcast, on one fourth acre of land; the other three sections of the acre, which was exactly like the former in condition and previous treatment, had the following fertilizers: Next to manure, Bay State Fertilizer 135 lbs. per one fourth acre; next section, dissolved bone-black 105 lbs., muriate of potash 45 lbs., sulphate of ammonia 10 lbs., sulphate of iron (copperas) 8 lbs.; and the last section like the above, with copperas omitted. The following table shows the yield of the various sections:

		Sound corn.	Soft corn.	Fodder.
Section 1.	Manure . . .	819 lbs.	170 lbs.	1,195 lbs.
Section 2.	Bay State Fertilizer .	730 "	130 "	990 "
Section 3.	Bone-black, muriate of potash, and sulphate of ammonia . .	670 "	170 "	970 "
Section 4.	Ditto + copperas .	820 "	110 "	1,000 "

The cost per quarter acre was as follows:

Section 2, $2.60. Section 3, $2.60. Section 4, $2.90.

It will be seen from the crop produced that section 1, where the manure was used, produced slightly more in value of total crop than section 4, and hence it is fair to assume that the value of the manure, as compared with products of known cost, was about $3.00 for the 420 pounds, or 71 cents per hundred pounds after shrinkage, or 56 cents before shrinkage. If these figures are correct, then the 662 pounds produced in sixteen days was worth $3.70, and the food consumed cost at market prices only $3.13. Clearly there is some unaccountable effect from manure not indicated by chemical analysis, for at the most liberal estimate this same 662 pounds could not be valued chemically at more than 75 cents, and at the prices per pound for plant-food above given, only 53 cents could be allowed for it.

I do not present this test as final, by any means, for it seems incredible that so small a quantity of farm-yard manure could possibly yield such returns as compared with the commercial or chemical fertilizers; but all the work was accurately done. The crop was evidently much better than sections 2 or 3, and apparently much like section 4, and I know exactly what the fertilizer on section 4 cost and can see no fallacy in the assumption that if two things are equal to a third, they must be equal to each other, and as 1 and 4 were equal in product, it follows that they were equal in value.

I am investigating this same matter still further this year, and am fully satisfied that all investigators have neglected farm-yard manure as an object of study and experimentation, and by this I do not mean that chemical fertilizers are worthless, or that it is poor policy to make intelligent use of them, but on the contrary I am satisfied that the use of fertilizers does pay in dollars and cents, and that there is propriety in their use as aids in restoring fertility to exhausted soils.

RATIONS FOR FEEDING STOCK.

The following are a few of the rations that have been practically tested at the College farm during the past two years, and nearly all of them are such as the practical farmer may find advantage in using; for accurate work in feeding is as desirable as in any other business, and the day of guess-work is passing away.

The following table shows the weight of four quarts of the several kinds of grain, and will help to make the rations easy of application, for all the rations are given in pounds:

	Weight per 4 qts. lbs.	ozs.	Weight per quart. lbs.	ozs.
Cotton-seed meal	8	—	2	—
Gluten meal	7	—	1	12
Corn and cob meal	6	—	1	8
Eastern clear corn meal	7	4	1	13
Western clear corn meal	7	4	1	13
Ground oats	3	—	0	12
Ground barley	4	—	1	—

RATIONS FOR COWS GIVING MILK.

Live weight, 1,000 lbs.

	1* lbs.	2* lbs.	3 lbs.	4 lbs.	5* lbs.	6* lbs.	7* lbs.	8* lbs.	9* lbs.
English hay	15	15	5	20	....	....	....	....	10
Corn fodder	15	....	....	....	....	....	....	....	....
Oat straw	....	....	....	10	....	....	....	....	....
Rye hay	....	....	....	....	8	....	....	....	....
Southern corn	....	....	....	....	....	....	....	....	....
Ensilage	....	....	40	....	40	....	....	....	30
Clover hay	....	....	....	....	8	15	15	15	....
Bean vines	....	15	....	....	....	15	15	15	....
Corn and cob meal	....	....	....	....	4	8	3	3	....
Ground oats	4	....	....	....	....	....	....	....	....
Ground barley	....	....	....	....	....	....	....	....	....
Linseed	....	....	....	....	....	....	5	....	....
Cotton-seed meal	4	....	....	3	....	....	....	....	2
Gluten	....	4	5	....	....	....	....	5	....
Middlings	....	....	....	....	....	....	....	....	8
Clear corn meal	....	4	5	....	....	....	....	....	....

* Rations in use on College farm.

RATIONS FOR FATTENING CATTLE.

Weight, 1,000 lbs.

	1* lbs.	2* lbs.	3* lbs.	4* lbs.	5* lbs.	6* lbs.	7 lbs.	8 lbs.
English hay . . .	12½	....	12½	10	22	22	5	....
Oat straw . . .	7½	5	....	...	....	....	....	....
Corn fodder . . .	....	....	....	13	....	....	....	....
Clover hay . . .	....	10	....	....	....	....	....	....
Bean vines . . .	...	5	....	....	....	....	....	....
Ensilage	...	....	....	....	....	....	50	....
Rye hay	....	....	....	....	....	....	....	....
Oat hay	....	....	12½	....	....	....	....	....
Corn meal . . .	....	....	....	....	....	....	....	....
Corn and cob meal .	5	5	....	5½	6	6	9	....
Cotton-seed meal . .	4	5	....	5	....	....	....	....
Gluten	....	....	....	....	6½	....	6	....
Linseed	....	....	....	....	....	6½	....	....
Ground oats . . .	3	4	....	....	....	....	...	. ..
Bran	....	....	2½	....	....	....	....	....

* Rations in use on College farm.

The data of a long feeding experiment with early and late cut hay, and with gluten and linseed for fattening cattle, I have not had time to work up, and shall give the results in a farm report soon.

CUTTING AND STORING HAY.

YIELDS OF EARLY AND LATE CUT. — COST OF HARVESTING, ETC.

At the commencement of haying in 1885, plats for early and late cutting were measured off, and the hay secured at different dates was weighed, stored separately, fed in separate lots, the shrinkage noted; also the second crop was cut and weighed separately. This experiment covered two kinds of hay, pure timothy and pure clover.

There is much needless controversy about late and early cut hay, which would not exist if every experimenter had a definite understanding of what late and early mean; one farmer calls late-cut hay that which is secured in the last days of August or the first of September, and there is no doubt but such hay is late cut, but the trouble is it is too late. Another farmer speaks of early-cut hay as that cut before the heads are in sight; such a farmer has gone to the other extreme, and is nearly as much too early as the other was too late.

There is another point which some regard as the decisive factor regulating early cutting; it is said to be the time of second blooming of herd's-grass. Now if any one knows when herd's-grass blossoms a second time, I have no doubt it will prove a valuable guide, but the fact that no variety of herd's-grass yet produced has ever blossomed a second time, or ever can, is a serious difficulty in the way of depending on this criterion. I do not know how the idea that herd's-grass blossomed twice originated, but it is in no way based on facts.

There are two points in the development of herd's-grass that are quite definite, and may be used as guides; one is the time when the first blossoms are put forth, a few at each head; the other is when the seed is fully formed and the contents in a doughy state. The period between these is usually about fifteen days, being less in very dry seasons and more in wet ones. I do not claim that these guides are absolute, but they are the best that I have been able to find, and in all of my work, when early and late cutting are spoken of, the terms refer to these two conditions of growth and maturity. With clover the case is different and less satisfactory. Early-cut clover, as I use the term, means clover cut as soon as the first perfect, full-blossomed heads appear, and late means when but few fresh blossoms are to be found, more than ninety per cent of the blossoms having turned brown.

Table I.

Early and Late Cut Clover, 1885.

Time of cutting.	Area cut.	Yield of cured hay.	Yield per acre.	Shrinkage in barn.
Early.	Acres.	lbs.	lbs.	per cent.
First crop, June 29 . . .	1.46	4,385	3,003	35
Second crop, September 1 .	1.46	3,255	2,230	
Sum of two crops . . .			5,233	
Late.				
First crop, July 9 . , .	1.12	4,255	3,803	30.8
Second crop, September 3 .	1.12	2,550	2,071	
Sum of two crops . .			5,874	

Table II.

Early and Late Cut Herd's-Grass, 1885.

Time of cutting.	Area cut.	Yield of hay.	Yield per acre.	Shrinkage in barn.
	Acres.	lbs.	lbs.	per cent.
July 4	.72	3,470	4,827	24½
July 13	.71	3,475	4,911	21½
Early and Late Cut Herd's-Grass, 1886.				
July 5 and 6	5.2	21,050	4,048	21
July 21 and 22	4.53	21,030	4,642	25

Samples of both the early and late cut were taken from each lot in the barn November 29, 1886, and were analyzed by Dr. Burleigh with the following results :

TABLE III.

	Early-cut.	Late-cut.
Water	10.85	12.05
Albuminoids	5.83	4.07
Crude fiber	27.55	28.85
Carbo-hydrates and fat . .	50.67	51.25
Ash	5.10	3.78

With data in these tables an accurate estimate may be made of the amount of nutrient materials produced per acre.

TABLE IV.

	Yield per acre.	Shrinkage, per cent.	Amount of hay at time of sampling.	Water, per cent.	Total dry substance.	Various materials produced per acre.			
						Albuminoids.	Carbo-hydrates and fat.	Fiber.	Ash.
	lbs.		lbs.		lbs.	lbs.	lbs.	lbs.	lbs.
Early-cut,	4,048	21	3,198	10.85	2,851	186.44	1,620.4	922.6	163
Late-cut,	4,642	25	3,482	12.05	3,062	141.71	1,784.5	1,004.5	132
Gain or loss of late-cut,	+594		+ 284		+ 211	— 34.73	+ 164.1	+81.9	—31

The average shrinkage during these two years' experiments is one of the surprising things brought out. I had no idea that the shrinkage of well-cured hay was more than ten to fifteen per cent, but

The clover shrank	. . . . .	32.4 per cent.
Herd's-grass "	1885	23.0 "
" "	1886	23.0 "

It is safe to estimate, therefore, that if one hundred tons are put in the barn, not more than seventy-five can be counted on at feeding time, and this should not be lost sight of by those who buy hay from the field at hay-time.

COST OF HARVESTING HAY.

At the commencement of haying, in 1886, an accurate account of the time of men and teams was kept throughout the entire time, and it may prove interesting to those who are interested in knowing the exact cost of farm operations; and as it covers the harvesting of 100 tons, it may fairly be claimed that the figures are reliable.

TABLE V.

	Tons put in barn.	Whole cost.	Cost per ton.
July 5 to 10,	30.75	$35.88	$1.16
" 12 to 15,	23.30	30.15	1.29
" 19 to 23,	34.00	37.50	1.10
Totals,	88.05	$103.53	$1.18

In addition to this amount there was put in about ten tons, not weighed, and which would bring the yield of the first crop up to nearly one hundred tons, from less than forty-five acres of land in grass.

The relative cost of the different operations connected with securing a ton of hay may be given as follows:

Mowing	$0.74
Raking	.27
Drawing in and unloading	.17
Total	$1.18

The average distance from the barn is not far from fifty rods. It must be remembered, however, that the season of 1886 was one of the most favorable ever known; there was scarcely a break in the weather during July, and of the whole 98 tons put in, less than 6 tons got wet after cutting.

One observation made during haying I think worthy of record and future study. During the first ten days of haying, July 5 to 15, there was no rain, and the mowing-machine knives daily became heavily coated with "gum" or wax, so much so that it was difficult to keep them in condition for easy cutting. I do not think I ever saw so heavy and so dense a coating before, and was curious to know why it should be so. On July 14 half of a nine-acre field was cut, and the daily accumulation of "gum" was even greater than before. July 15 we had quite a heavy rainstorm, it being the first rain of any amount after June 25. July 17 the remainder of the nine-acre field was mowed, and the machine knife came in perfectly clean and bright, with no trace of "gum" on it. It has always been regarded by good farmers as an indication that hay is more valuable in those years when scythes "gum" considerably, but it would seem from this one observation that the presence of gum depends more upon dry weather than upon any particular effect of season. It may be added that during the remainder of the season no "gum" was seen on the scythe.

TESTS OF SEED

SENT BY THE DEPARTMENT OF AGRICULTURE.

In the spring of 1886 I received several varieties of imported seeds, a few of which seem to promise something in the way of forage crops for us in New Hampshire.

The *Melon Barley*, a Russian variety, is certainly a very fine yielder, and has a remarkably plump, meaty berry. It will be still further tested the coming season.

A Russian oat, the *White Victoria*, gave a very heavy grain, 40 pounds per bushel, and though injured by late sowing and a dry season made a good growth of heavily headed straw.

Three new forage plants were included among the seeds sent, and two of these are certainly very promising.

Spergulum Maximum is a fine growing, thickly-branched plant, which under favorable circumstances must be a heavy yielder.

Ieradella does not seem suited to our soil. It is a small grower, and seems too delicate for the rough treatment of common farm culture.

Vicia Velosa, a vetch, is especially to be recommended for further experiment. This plant is of the clover family, and is an extremely luxuriant grower, and one of the most profuse bloomers I have ever seen, and it is not at all improbable that this will prove a valuable honey plant, as it continues blooming until killing frosts cut down everything. The quantity of seed was very small, and therefore no accurate estimate could be made of the yield that might be expected per acre, but I should consider this plant capable of producing four tons of cured hay per acre, containing not far from 15 per cent of albuminoids. The seed matures well in this climate, and it is hoped to produce a sufficient quantity for further and more extensive experiments in the future.

Alfalfa. There is considerable said about this member of the clover family, and in climates suited to its production enormous quantities are produced per acre; but I am inclined to think it a total failure on clayey land in this latitude, though part of it seems to have wintered fairly, but the fact that there has been no freezing to damage the most tender plants this winter, is enough to convince me that in a severe winter for the land no alfalfa could survive; it may prove differently, however.

Alsike Clover has proven a decided success thus far, and is to be extensively used on the farm this year.

Yellow and Blue Lupins made very good growth, but no estimate of their yield or value could be made.

Jœger Bean and the *Puff Bean* also grew well and matured their seed.

The sample bag of *Pride of the North* corn seemed especially adapted to the silo. It is a vigorous grower, and gets its seed well into the glazed state even when late planted.

TURNIPS.

July 16, five varieties of turnips were sown, and November 19 they were harvested with the following results for equal areas:

	Pounds.	Quality.
Great Southern Prize . . .	35½	Fair.
Flat Dutch	34	Good.
Purple-top Strapleaf . . .	48½	Extra.
Yellow Aberdeen	24	Very poor.
White Norfolk	35½	Fair.

GLUTEN MEAL.

In the experiments on stock feeding I have spoken of the use of gluten meal, and as it is not a well-known food except near cities, I will give an account of the way it is manufactured and what it is. It is a well-known fact that vast quantities of corn are annually made use of in the manufacture of glucose or starch sugar, an article largely used in the manufacture of beer, candy, syrups, etc. This whole industry depends upon a purely chemical discovery, not recent by any means, but of recent application. It is a well-known fact in chemistry that if starch is boiled for two or three hours with a very dilute mixture of sulphuric acid and water that the starch becomes converted into a kind of sugar called glucose. The chemical composition of starch and sugar is very similar; both are made up of three elements, — carbon, hydrogen, and oxygen. Starch is represented by the formula ($C_6H_{10}O_5$), and glucose by the formula ($C_6H_{12}O_6$); that is, starch ($C_6H_{10}O_5$) + water (H_2O) = glucose ($C_6H_{12}O_6$), and the sulphuric acid has the property of causing this addition of water to the starch, and consequently the production of glucose.

In a report to the Sanitary Committee of the State of New York, Mr. Albert L. Colby embodies the results of his investigation of the Buffalo sugar works, including three factories with a daily capacity for 17,500 bushels of corn. The following condensed statement of the process of manufacture is taken from this report:

PROCESS.

Screened No. 2 corn is run into hoppers, weighed, and conveyed into wooden vats of 500 to 1,000 bushels' capacity, and enough warm water run in to cover the corn. A temperature of 130° to 140° is maintained for twenty-four hours, at the end of which time the first water is drawn off and a new lot supplied, and the soaking process continued from twelve to twenty-four hours more. This is to soften the corn, after which it is ground in burr-stone mills in contact with running water. This reduces the corn to a paste, which is carried to frames covered with bolting cloth, being constantly shaken and sprayed with water, which washes the starch through the cloth, leaving the other constituents of the corn on the cloth, and it is this part which is dried and sold as gluten meal. The starch which is washed through is run into settling tanks, and when it has subsided the water is drawn off. The next step is to agitate the starch with dilute alkali for two or three hours, after which it is pumped on to the starch tables, from which the alkali water runs off, leaving the starch. This starch is thoroughly mixed with water, forming a cream. The converters are vats holding from 3,000 to 4,000 gallons (or the starch from 1,000 bushels of corn). At first a little water is run into these vats, and then sulphuric acid (1 to 1½ per cent) is slowly added. The mixture is then brought to a boil and kept boiling by means of steam; the starch cream is next slowly added, keeping the contents of the converter boiling all the time, and after the starch is all in the boiling is kept up for two or three hours. One other method is to boil the starch and acid in closed converters under pressure, only nine minutes being required to change the starch to sugar.

Marble dust is next added to neutralize the acid in the mixture. The filtration of this neutralized mixture through bone-black, and evaporation to sugar in vacuum pans, completes the process.

The composition of corn, as given from many analyses, is as follows:

	Per cent.
Water	10.04
Albuminoids	10.46
Carbo-hydrates	70.69
Fat	5.20
Fiber	2.09
Ash	1.52

Let us trace one thousand pounds of corn through the factory and see how its original constituents are distributed in the products. It has been found in the factories that for each one thousand pounds of corn bought there is a loss, in winnowing and screening, of thirteen pounds, leaving nine hundred and eighty-seven pounds to be accounted for.

Table showing composition of 987 pounds of corn (in pounds).

		Made up of 500 lbs. starch and 250 lbs. gluten meal.		Loss.
		Starch.	Gluten meal	
Water	100	....	26	74
Albuminoids	102	....	73	29
Carbo-hydrates	700	500	123½	76½
Fat	50	....	22	28
Fiber	20	....	3½	16½
Ash	15	....	2	13
Totals	987	500	250	237

The question is often asked, How can the gluten meal be better than the corn from which it is manufactured, especially as part of the corn (the starch) is taken away? The table given is the best possible answer to this question. One thousand pounds of corn are required to produce two hundred and fifty pounds of gluten, and in this two hundred and fifty pounds is found 71 per cent of the *total albuminoids in the* WHOLE THOUSAND *pounds of corn*; also 44 per cent of the fat, and only 18 per cent of the carbo-hydrates. Hence, it is evident that gluten must be richer in albuminoids and fat than the corn, and less rich in carbo-hydrates, which are least valuable of the constituents of any food.

The following table shows the analysis of corn already given and two analyses of gluten, sent on for examination by the Chicago Sugar Refining Co.; No. 1 analysis made by Dr. Burleigh, No. 2 by Mr. Hazen:

	Corn.	Gluten meal.	
		No. 1.	No. 2.
Water	10.04	10.35	9.49
Albuminoids . . .	10.46	29.09	29.52
Carbo-hydrates . . .	70.69	49.51	51.77
Fiber	2.09	1.50	
Fat	5.20	8.70	8.65
Ash	1.52	0.80	0.57

I do not know as the digestibility of this feed has been accurately determined, but I am convinced that it is a highly digestible food and one which, from its mechanical condition, is in a very desirable form for a concentrated food, and I have no hesitation whatever in recommending it in place of cotton-seed meal, which I regard as an unsafe food for dairy cows unless used with more than ordinary caution.

ENSILAGE.*

It is unnecessary at this period in the history of the ensilage question to make any extended remarks concerning the origin and adoption of this now acknowledged important food. It is sufficient to say that it originated in Germany, where vast quantities of the beet-pulp, from beet-sugar factories, were annually going to waste for want of a method of preserving it in condition suitable for stock food. Stewart says, "Some parties who desired to preserve the refuse beet-pulp for future feeding hit upon the plan of pitting it like potatoes, and found that it could be preserved in this way for many months." The pit was simply a trench dug in the ground. Into this the beet-pulp, and later green corn, was trodden, the dirt was thrown over it, and in this condition it remained until required for food. The desirable condition in saving any green vegetable substance, whether canning fruit, vegetables, or ensilage crops, is the exclusion of air, for the presence of air favors fermentation, and fermentation means decomposition, which, if carried far enough, spoils any article of food. Now it was known that fruit, in air-tight jars, if properly prepared, would keep almost indefinitely; but it was impossible to store such vast quantities of food as would be required by farm stock in such an expensive way, and it became necessary to provide a cheap but effectual substitute for the glass jar which preserves the delicious fruits of all countries to please the taste of man.

Goffart, of France, made a great advance in this direction when he built air-tight parallel walls to take the place of the trench first used. He also provided a wooden cover for his silo instead of piling earth on the top, so that the silo of to-day is in all its essential features just as Goffart built his.

In the United States, according to Stewart, ensilage was first tried by Francis Morris, of Maryland, about the year 1876. The next to try the new food was O. B. Potter, of Sing Sing, N. Y., who built a masonry silo in 1877. In 1879 Dr. J. M. Bailey, of Massachusetts, built a double silo of a capacity of 125 tons.

At first many wonderful results were claimed for the preserved food; men were not wanting who believed and openly declared that food rapidly increased in nutritive value in the silo. Sober, thinking men saw the folly of such extravagant claims and naturally waited to see the outcome, but to-day the question has resolved itself into two parts, — the practical and the scientific investigation of the nutritive value, and economy of production and storage.

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* This was issued as a farm report.

In the spring of 1886 preparation was made for the construction and filling of a silo in the College farm barn, and the chief object in view was to make a thoroughly practical test of the system. The first step was the construction, which brought with it several unsettled questions which are sure to confront every man who contemplates building. Shall we build of masonry or of wood? There was a time when the unanimous verdict would have been masonry, and there are conditions to-day which would probably make it almost necessary to build in this way, but for the majority wood is to be recommended. The cost is less. The condition of the ensilage, if we may accept the experience of the ensilage king of New Hampshire, is much better from a wood silo than from a stone or concrete one.

The College farm silo was built in a section of one corner of the barn, and when complete was 15 feet 3 inches by 15 feet 6 inches, with a possibility of a height of 40 feet, but at present it is only 20 feet high. At the bottom for a height of 2 feet a stone wall was put in, and one side is stone up to the sill of the barn, about 12 feet. The bottom was cemented, and also the sides up 2 feet. At the top of this low wall were placed heavy sills, and between the sills of the silo and the sills of the barn on three sides were placed studding 3½ inches thick and 12 inches wide, the distance between them being 2 feet. This forms the frame-work of the part below the barn floor, and to prevent spreading, diagonal rods ½ inch in diameter run from lower to upper sills. The boarding was second-quality spruce, edged square, and planed to uniform thickness. The edges were not tongued and grooved, as it is an entirely unnecessary and useless expense. The two courses of boarding break joints, and when thoroughly nailed make a tight wall. The part above the barn sills was built in the same way, rods being put in to prevent spreading.

The cost of construction may be stated as follows:

MATERIAL.

Sills. 250 feet at $10 per M	$2.50
Studding, 1,000 feet at $10 per M	10.00
Boarding, 2,000 feet at $12 per M	24.00
Cement, 3 casks at $2 per cask	6.00
Nails, 150 pounds at 3 cents	4.50
Sand for cement	.50
Frame rods, 150 pounds at 2¾ cents	4.12
Total material	$51.62

LABOR.

Drawing stone	$2.50
Digging out and laying wall	5.00
Placing sills and setting studding	5.00
Boarding	5.00
Cementing wall and bottom	2.50
Work on rods	1.00
Other labor not included	2.50
Total for labor	$23.50
Total for material	51.62
	$75.12

The capacity as far as boarded is about 100 tons. Now to any who may be thinking of building it may be said that the material is the part of the expense most to be considered, for almost any farm laborer is capable of doing all the work, if a carpenter is hired two days to lay out the job, and for those who have an abundance of lumber, plenty of stone, and skill enough to plan as well as construct the silo, the actual cash outlay may be stated as follows:

Sawing 3,250 feet of lumber	$8.13
Planing 2,000 feet of boards	1.00
Three casks of cement	6.00
150 pounds nails	4.50
Rods, if needed, and blacksmith-work	5.00
Total cash outlay	$24.63

The cost of providing a silo, then, need not stand in the way of providing ensilage for winter food.

RAISING THE ENSILAGE CROP.

True economy demands that the ensilage corn shall be planted as soon as the temperature of the soil is sufficient for germination, say from 48° to 55°. It is safe to say that very little should be planted in New Hampshire before May 15, and in the northern part of the State at least ten or twenty days later. Of the variety of corn best adapted to the silo I shall speak later.

The land for the crop on the College farm was broken up May 18, 19, 20, 21, 27, 28. Planting was done May 29. The cost per acre during the season was as follows:

Drawing manure	$3.57
Spreading manure	.50
Plowing	1.30
Harrowing	.60
Marking and planting	1.01
Applying fertilizer	.32
Cultivating crop	1.48
Hand hoeing	2.64
Total labor per acre	$11.42

Yield per acre	22 tons.
Cost of labor per ton	52 cents.

The following table shows the amount of various fertilizers and manure used per acre, and also the amount of plant-food in pounds supplied by each:

	Lbs. nitrogen.	Lbs. phosphoric acid.	Lbs. potash.
3 cords or 10½ tons farm-yard manure	94.5	42.0	45.0
143 pounds hen manure	2.0	1.2	1.0
30 pounds ashes		1.0	2.0
60 pounds common fertilizers	1.2	7.0	1.2
30 pounds dissolved bone-black		4.5	
30 pounds kainit			2.4
Total	97.7	55.7	51.6

Now from the analysis of the corn, which was made by Dr. Burleigh, I have compared the amount of plant-food actually removed from an acre of land by this crop of 22 tons. The following table shows what was supplied and what was taken away:

	Lbs nitrogen.	Lbs. phosphoric acid.	Lbs. potash.
Furnished by manure and fertilizer	97.7	55.7	51.6
Taken away by crop of 22 tons	86.7	20.2	72.0
Gain or loss in soil	11.0	35.5	20.4 loss

The value of the manure and fertilizer used was $15 per acre at the common market price, but the same amount of plant-food as was actually taken from the land could have been provided for about $12, with no loss to the soil. At the latter cost the fertilizer per ton of ensilage would cost $0.54½.

The cost of harvesting, from standing corn to covered silo, is given for total of 48 tons produced:

Cutting	$6.00
Drawing to barn	15.13
Packing in silo	5.37
Total for 48 tons	$26.50
Cost per ton	.55

This brings the whole cost per ton as follows:

Raising crop per ton	$0.52
Fertilizing and manure	.54½
Harvesting	.55
	$1.61½

Add to this the cost of seed per ton, .07, and one half interest on the land per ton, .09, making the whole cost of the ensilage $1.77½ per ton. I have charged only half the interest, because on the same land I now have winter rye which will come off in season for another ensilage crop.

It may be as well at this point to discuss the methods of filling the silo. The original method was to fill with whole corn; later came the ensilage-cutter and chopped ensilage, and to-day we find both cut and whole ensilage. Nor must it be supposed that either system has all the good or all the bad points.

Now the preservation of ensilage in good condition depends upon the degree of fermentation, and the fermentation is dependent upon certain limits of temperature. It is well known in bread-making that too high a temperature destroys the yeast plant, and stops all fermentation.

Canned fruit which has commenced to "work" or ferment is scalded to kill the growing plant or germ which causes this change. The whole subject of fermentation is closely connected with the method of preserving green food in the silo.

It is a well-known fact that a solution of sugar, if a little yeast is added, soon changes, bubbles of gas coming off. Now in this change the sugar is split up into alcohol and carbonic acid gas, the latter coming off in bubbles. If we add a little "mother of vinegar" to this liquid, which is left after the action of the yeast, it will again change, the alcohol passing into acetic acid or the acid of vinegar. Cider contains sugar, which by "working" is changed into alcohol and carbonic acid gas; this is the origin of the alcohol in cider. Then by the action of the vinegar plant or "mother" this alcohol is converted into acetic acid; this is the process of vinegar-making.

Milk contains 4 to 5 per cent of sugar, and, by the action of a minute germ, this sugar turns into lactic acid, the acid of sour milk.

In the juices of the ensilage crop sugar abounds, and when masses of corn are thrown into a pit, fermentation soon begins, alcohol is produced, then acetic acid, and this is always attended by an increase of temperature.

Turning from the ensilage for a moment let us see what is done to stop fermentation. Yeast is killed by heat; fermenting canned fruits are saved by scalding. I have proven, by direct experiment, that skim-milk in two vessels, one raised to a temperature of 135°, the other remaining at atmosphere temperature, the former will keep forty-eight hours, the latter less than ten; and so from these known facts relating to fermentation we may well suppose that ensilage, if allowed to come to a temperature of 140°, will cease to ferment and remain sweet. This theory has been advanced, and is in a measure becoming accepted, so that the idea that a silo must be filled in the shortest possible time is now giving way to the idea that slow filling is best. The rule which I adopted in filling the College farm silo was to allow the temperature, one foot below the surface, to reach 140° by the thermometer, but the great difficulty is to get a uniform temperature all over the silo. In fact it is impossible to do this, for while one area is at 140° another may be cold, but slow filling insures a reasonably thorough elevation of temperature, which checks fermentation and prevents the formation of acetic acid.

Whole corn in the silo has less tendency to become sour than the same corn chopped, for the same reason that unbruised apples keep a long time, but apples ground for cider-making ferment rapidly, the crushing of the apple facilitating the changes which convert sugar into alcohol. It is easier, therefore, to preserve whole ensilage in a sweet condition than that which is run through the cutter.

But there are other considerations which must be taken into account. Whole ensilage is wasted if the corn was of rank growth.

It is impossible for cattle to eat the coarse stalks of corn that produces 20 to 25 tons of green fodder per acre.

The question whether ensilage shall be put in whole or cut up into short length must be answered according to circumstances. The extra cost of cutting will no doubt be fully paid by the lessened amount of waste in feeding, but it often happens that it is next to impossible for small farmers to get a horse power and cutter to do the work at the right time, and a good many farmers in New Hampshire to-day would build silos but for the trouble of having the corn chopped, and it is to such that I wish to recommend the method of filling whole.

In my opinion no farmer in New Hampshire to-day who has five or more head of cattle can afford to let another year go by without the addition of a silo, and I am convinced that fully two thirds of these same farmers would be obliged to put their ensilage in whole, if at all, and it is in no way a serious hinderance to the success of the system.

The corn will keep better whole, it will cost less to secure it, it will pack in as small a space per ton; on the other hand, more will be wasted by the stock, it is harder to get out of the silo, and leaves coarse stalks in the manure.

I have already given the cost of raising and securing the crop of ensilage corn, but I also put in 35 tons of common field corn, cut up when in the glazed state and packed in the silo, ears and stalks together. The cost of this ensilage per ton was as follows:

Cost of raising	$1.42
Cost of harvesting	.61
Value of fertilizer used	.76
Cost of seed	.10
Interest on land (½)	.20
Whole cost per ton	$3.10

Yield per acre, 10 tons.

After filling, the silo stood six days uncovered. It was then double-boarded on top, and 6 tons of dry sand were spread over the top, making it some 6 to 8 inches deep. This gives a weighting which excludes air and presses evenly over the whole surface; the sand is also of value as an absorbent to be used in the stables after being removed from the silo.

Two samples were taken, one September 10 the other September 22, 1886. The condition of the corn September 10 was that the silk was just appearing. A single stalk was taken and the leaves, tassel, and stalk weighed separately. No. 1, September 10, weight of stock, 2 lbs. 11½ oz.; weight of leaves of stalk, 11 oz.; weight of tassel, 2 oz.; total, 3 lbs. 8½ oz. Analysis: water, 82.2 per cent: ash, .72 per cent; dry organic substance, 17.07 per cent, containing albuminoids, .812 per cent, carbo-hydrates and fat, 13.338 per cent, crude fiber, 2.87 per cent, total, 17.07 per cent.

But the value of a green food is not entirely determined by its total composition. It is the digestible portion which regulates the value; just as the value of coal is determined by the amount of combustible material which it contains, and if there are left of shale and clinkers 200 pounds in every ton, the actual valuable part of a ton is only 1,800 pounds. Now, by experimental work, it has been found that of every 100 pounds of albuminoids in ensilage, 73 pounds are digestible, or 73 per cent of the albuminoids is of use to the ox or cow. This per cent is called the "digestion co-efficient." We shall have occasion to refer to this again in connection with feeding.

The second sample taken September 22 had one well-formed ear, with kernels in the watery condition, and another just in the cob-forming stage. Weight of stalk, 3 lbs.; weight of leaves, 8 oz.; weight of husks, 6 oz.; weight of ears, 1 lb.; total, 4 lbs. 14 oz. Analysis: water, 79.58 per cent; ash, .76 per cent; dry organic matter, 19.66 per cent, composed of albuminoids, 1.22 per cent, carbo-hydrates and fat, 15.37 per cent, fiber, 3.07 per cent, total, 19.66 per cent.

Here is a loss of water amounting to 3 per cent, reckoned on the water contents of the first sample, and a gain of 15 per cent in total dry organic matter. This gain is all the more important as it is largely of the more valuable constituents. Thus the albuminoids gain 50 per cent in the twelve days; carbo-hydrates gain 15 per cent in twelve days; fiber gains 7 per cent in the twelve days; ash gains 6 per cent in the twelve days.

This change is very much as might be expected, for at the period of blooming most plants increase the per cent of albuminoids quite fast, and we may well suppose that it is good policy to allow ensilage crops to stand until the formation of the seed is well advanced. It is also reasonable to suppose that the variety of corn to be planted in any given section should be determined by the length of season, a seed being selected which will bring the kernel into the glazed state before the early fall frosts come.

The following record is on my books September 20: Condition of filling silo: commenced September 14, and packed 14.8 tons; September 15, packed 7.3 tons; total, 22.1 tons. On the evening of the latter date the corn occupied a depth of ten feet in the silo, which is 15¼ by 15½ feet, or in all 2,363 cubic feet, less space taken up by foundation stone at one corner, 2,250 cubic feet, or 100 cubic feet per ton as filled.

September 18. — Contents had settled three feet, so that one ton now occupies sixty-six cubic feet. Added to-day ten tons. At 10 A. M., September 20, three feet below the surface; the temperature is only normal, but the sweating stage has been reached.

September 22. — Temperature of silo two feet below surface was 136°. One ton now occupies fifty-seven cubic feet. Added 9.9 tons to-day.

September 24. — Put in remainder of ensilage corn, 6.3 tons.

The temperature of the silo varied from 135° to 145°, and the whole was left without weighting for ten days, during which time 30.67 tons of Northern field corn were added at intervals of two or three days. October 12 the weighting was applied.

Some parts of the field of ensilage corn yielded better than others, and six rows, each sixty rods long, were selected as the best, and the weight of corn kept separate from the other. These yielded at the rate of twenty-five tons per acre, and while we read of forty, fifty, and seventy tons per acre, with all respect for those who make the claim, I must say that it seems impossible that even fifty tons can grow upon one acre of land. The rows that yielded twenty-five tons per acre were only three feet apart; the corn was planted at the rate of four to five pecks per acre, and grew on an average twelve feet high. Now how to double the yield is a question which in my opinion cannot be solved. That thirty to thirty-five tons' weight might be produced I will admit, but fifty to seventy is an absolute impossibility.

Before mentioning the feeding value of ensilage, I wish to call attention to the cost of producing a second crop from the same land where ensilage corn is raised.

Winter rye sown during the first ten days of October will commence to bloom by June 5, in favorable seasons, and should be cut, if designed for fodder, as soon as June 1, which will give ample time to plant fodder corn again or to sow millet and oats for a fall feeding crop. The following figures represent the actual cost of producing this crop:

Plowing, per acre	$2.00
Harrowing, per acre	1.10

Sowing grain	$0.40
Seed	1.25
Total	$4.75
Manure used up by crop, per acre	4.00
One half interest on land	2.00
Total	$10.75

Yield, two and one half tons of cured fodder, after shrinkage, making cost per ton, $4.30.

As long as our Northern corn ensilage lasted the cows were fed on it and the rye hay as follows:

For one thousand pounds live weight: Fifty pounds ensilage (ears and stalks together), eight pounds rye hay.

The ensilage cost fifteen and one half cents per hundred pounds, and the rye hay twenty-one cents per hundred pounds, but at the above price no allowance is made for shrinkage in the silo, which I have found from actual weighing to amount to some 20 per cent, as will be shown later, so that the actual cost per hundred pounds as fed out was nineteen cents. At this rate, the feed per cow per day would cost as follows: 50 lbs. ensilage, 9.5 cents; 8 lbs. rye hay, 1.7 cents; total per day, 11.2 cents.

Now, as a fact, these cows were doing as well on this ration as they had in previous years on a ration of — hay, 15 lbs.; corn fodder, 15 lbs.; oatmeal, 4 lbs.; cotton-seed, 4 lbs.; costing 26 cents per day. The economy of the former ration is evident.

The ears of corn being unhusked were preserved in perfect condition, having very much the appearance of boiled corn, and the whole was without the slightest trace of acid when tested by chemicals, which would indicate that the contents of the silo had suffered no other change than the loss of water.

The following analysis is of a single stalk, taken from the silo January 12, 1887, and had one large ear on it. The weight was as follows: Stalk, leaves, and husks, 1 lb. ½ oz.; husked ear, 12½ oz.; total, 1 lb. 13 oz.

The following analysis, by Mr. Allen Hazen, a graduate of the agricultural college, class of 1884, shows the composition of each part:

	Ear.	Fodder.
Water	57.16	80.70
Ash	.76	1.27
Fat	1.57	.39
Albuminoids	3.68	1.88
Carbo-hydrates	29.38	10.86
Fiber	7.45	4.90

Computing these percentages on the respective weights of ear and fodder and we get the composition of the whole to be —

Water	70.550	per cent.
Ash	1.050	"
Fat	0.898	"
Albuminoids	2.650	"
Carbo-hydrates	18.840	"
Fiber	6.000	"

After this Northern corn ensilage was used up, the Southern or ensilage corn was substituted, and with it grain in sufficient quantity to keep up the flow of milk; while to cows not in milk only the ensilage and rye hay with one feed per day of clover hay or timothy were fed.

A sample stalk of this ensilage was taken from the silo February 5, 1887, and carried to the college laboratory, when it was analyzed by Mr. Hazen, with the following results:

Water	81.60	per cent.
Ash	1.21	"
Fat	0.47	"
Albuminoids	1.53	"
Carbo-hydrates	8.87	"
Fiber	6.32	"

At this time a slight acid taste had developed, and it was found that the total acid, reckoned as acetic acid, equaled .36 of one per cent, which is low compared with most samples of ensilage.

As a fair illustration of the feeding value of ensilage, I will state the ration now being fed to the College farm herd of Short-horns, which is the same as has been fed since January 20. The herd consists of twelve cows and heifers, averaging a live weight of 950 pounds; only seven are giving milk; four are to come in during the first weeks in April. The daily ration for the twelve is — ensilage, 500 lbs.; rye hay, 70 lbs.; clover (second quality), 70 lbs.; corn meal (corn and cob), 30 lbs.

This ensilage, as has been already stated, cost $1.77 per ton when in the silo. It has shrunk 20 per cent, so that a ton as now fed would stand at a cost of $2.20 per ton, or eleven cents per 100 lbs.; rye hay at twenty-one cents, clover at forty cents, corn and cob meal at ninety cents. Applying these prices to the daily ration for twelve cows and we have —

500 lbs. ensilage, at 11 cts. per cwt.	$0.55
70 lbs. rye hay, at 21 cts. "	.15
70 lbs. clover, at 40 cts. "	.28
30 lbs. corn meal, at 90 cts. "	.27
Total	$1.25
Cost per cow, daily	10.4 cts.

These cows were never in better condition or gave a better flow of milk when wintered on hay and grain at a cost of twenty-five cents per day. Here again we see the economy of ensilage.

I have already given the condition of filling the silo, space occupied, etc. I will now give figures to show the shrinkage from various causes. The forty-eight tons of ensilage corn were put in in three sections, separated by a load of millet between each. Section 1, at bottom, had twenty-two tons; section 2 had ten tons; section 3 had sixteen tons. At time of feeding, section 3 gave 26,455 pounds, a shrinkage of 17.3 per cent; it occupied a space of fifty cubic feet per ton as taken out. Section 2 gave 15,047 pounds; shrinkage, 22.9 per cent; one ton occupies forty-one cubic feet. Section 1 is still being fed.

There are two sources of loss, one from the evaporation of water at the temperature which was reached, and another the spoiling of a small thickness of ensilage in contact with the walls of the silo, the greater portion of which was caused by freezing on two sides where a dead-air space was not provided, a loss which can be prevented in the future.

It will be interesting to compare the daily ratio above given with the standard supposed to be required, as given in any stock-feeding table, and for this purpose I will give the digestible nutritive constituents in ensilage, rye hay, clover, and corn and cob meal:

	Digestible albuminoids.	Carbo-hydrates, + fat, × 2.4.
Ensilage . . .	1.12 per cent.	11.33 per cent.
Rye hay	6.07 "	50.20 "
Clover	7.00 "	40.90 "
Corn and cob meal .	7.70 "	70.30 "

With these figures we get the following, showing the actual amount of digestible matter given to the twelve cows:

	Albuminoids.
500 lbs. ensilage, furnishing	5.60 lbs.
70 lbs. rye hay, "	4.24 "
70 lbs. clover, "	4.90 "
30 lbs. corn and cob meal, furnishing	2.31 "
Total	17.05 lbs.

	Carbo-hydrates, + fat, × 2.4.
500 lbs. ensilage, furnishing	56.65 lbs.
70 lbs. rye hay, "	35.14 "
70 lbs. clover, "	28.63 "
30 lbs. corn and cob meal, furnishing	21.09 "
Total	141.51 lbs.

	Albuminoids.	Carbohydrates.
Or per cow	1.42 lbs.	11.80 lbs.
Amount given in German tables as required, per day, by a cow weighing 950 lbs.	2.37 "	12.80 "

Here is a ration in all respects giving a satisfactory return of milk, keeping the cows in excellent order, and yet containing only 60 per cent of the amount of albuminoids which the tables tell us is necessary, and but 92 per cent of the required carbo-hydrates and fat.

There can be no doubt, however, that much of this seeming gain is in some way connected with the fact that the ensilage contains a large proportion of the water which these cows require, and although this intercellular water is at present nearly as cold as the water from the trough, and must therefore be warmed by bodily heat, yet it appears from the investigations of Prof. J. W. Sanborn and others that a food containing some 75 per cent of water and 13 per cent of digestible nutritive matter will produce better results than the same amount of digestible matter with the 75 per cent of water supplied by drinking. Pasture grass, in the growing season, contains nearly all the water needed by a cow. Turnips and other roots, so much prized by English feeders, supply nearly all the water needed, and the same of ensilage and soiling crops.

SHALL WE PLANT THE RANK ENSILAGE CORN,

Or a variety that will come nearer to maturity? Referring to our two kinds of corn ensilage, we find the following nutritive matter produced per acre by each kind, figured on a basis of twenty-five tons of ensilage corn and fifteen tons of field corn for our land, which will produce twenty-five tons of the former. It will be easy to raise fifteen tons of a late field corn which shall bring the ears into the glazed state.

	15 tons Northern field corn.	25 tons ensilage corn.
Albuminoids, per acre . .	796¾ lbs.	765 lbs.
Carbo-hydrates, fat, and fiber, per acre	8,100 "	8,160 "

This shows that fifteen tons, so far as feeding is concerned, are fully as valuable as the twenty-five tons of less mature crop, and it certainly is poor economy to handle the extra ten tons, as no good comes from it. In our experiments, the field corn only yielded ten tons, as not over 60 per cent of the seed ever sprouted, thus leaving a very poor stand of corn in many places. With good seed there is no doubt but fifteen tons may be raised on richly fertilized land, and of course this additional crop would reduce the cost of production per ton.

Another advantage of the field corn is the fact that there is no waste in feeding; every stalk is eaten. In several cases the waste from a feed of five hundred pounds was weighed, and varied from two to five pounds, which is scarcely to be considered.

I now wish to present a few figures, based upon the results already recorded, which may give some idea of the possibilities, and I wish to say that these are not mere speculations, but are all legitimate conclusions drawn from accurate results in the field and barn.

We will start with five acres of land of only ordinary fertility, and will supply sufficient manure to raise a crop of fifty tons of Northern corn, — a very ordinary yield, — and after the corn is removed will suppose it to be sown with winter rye producing ten tons of cured rye hay.

The entire cost of all labor, fertilizer, seed, and interest on land will not overrun $225. In actual feeding, for nearly ten months, the College farm cows had fifty pounds of just such ensilage, and eight pounds of rye hay. This then would keep ten cows two hundred days, which is about the time we have to feed in the barn in this latitude. Here is a cost per cow of $22.50, to which add pasturing through summer, $8, making the total cost $30.50. On a ration of hay, grain, and corn fodder it will cost for wintering two hundred days, $42; pasturing, $8; total, $50. Here is a gain of $19.50 per cow, which it is within the reach of New Hampshire farmers to save.

Let us see how the difference affects the cost per quart of milk. A good herd of any milk-producing breed will average 2,500 quarts per cow. Charging her whole year's keeping on ensilage and pasture, and the cost per quart is 1.22 cents; on the dry fodder keeping it is 2 cents per quart, a gain of thirty-nine per cent in favor of ensilage.

One other important point is often overlooked by some of the most enthusiastic advocates of ensilage; it is the practice of putting the ears of corn as well as the stalks in the silo. It is admitted by all that the corn fodder is preserved without loss. If so, why would it not hold true that the ears, if put in when glazed, or at the time corn is usually stooked, would also keep perfectly? and if so, where is the compensation for the cost of husking and milling?

It takes four baskets of corn, as husked, to make one hundred pounds of meal, and it costs five cents per basket to get it husked, making twenty cents; it costs three cents per bushel for grinding, making twelve cents. In most cases it will cost two cents per bushel to carry the grain to the mill; adding eight cents per bushel, this makes the cost of husking, grinding, etc., forty cents per hundred pounds of meal, and in case of those that have practised picking the ears and putting stalks in the silo, the same meal is fed out with the ensilage, practically putting it back where it grew, but not until an expense greater than the cost of raising has been incurred.

I am certain of this; the corn keeps in perfect condition; it is eaten without waste, the cob being as easily masticated as any part; very few kernels, if any, are seen in the manure.

The saving of expense is considerable, and I know of no loss. I am satisfied that in ten years a majority of the ensilage-users will fill their silos with well-matured corn, the ears going in with the stalks, the whole coming out a perfect ration, furnishing what the milch cow needs in the right proportion.

In closing I would say to every farmer, into whose hands this report may fall, that it will pay him well to study this subject of ensilage.

It will pay a great majority of our farmers to build silos, and there is no need of any great expense. And above all I want to call the attention of small farmers who have feared the trouble of getting their ensilage cut, to the fact that whole ensilage is just as good as that which is cut. It is more easily stored, keeps better, and, if of field corn, is not wasted in feeding, and there is no reason why any farmer may not build a small silo and store whole corn ensilage.

ROOT EXCRETION.*

One of the most obvious peculiarities of the maize or Indian corn plant, is its habit of throwing out aerial roots just at the period of flowering. One, two, and occasionally three rings of these roots push out through the enveloping leaf of the stalk, and, at a distance from it about equal to the height of the root from the soil, enter the ground. This is about all that a casual observation shows, but having occasion to examine these roots quite closely during the past summer, I found that many of them from the time of first appearance until they entered the soil — a period of from five to eight days — were covered with a colorless and extremely viscid substance resembling thick mucilage, that often accumulated at the point of the root in masses larger than a pea, and which but for its viscidity would have fallen to the ground. Upon examining one of these roots I found that as it entered the ground this viscid substance united with the fine particles of soil, forming quite a dense covering, which, if forced off, resembled the bark of a small twig. This condition of the root at once suggested a series of questions which I thought to answer by consulting various authorities, and by theorizing from the facts recorded in their writings.

Thomé notes † that "since experiment has shown that cell-sap is almost always acid, its passage into the ground [by osmosis] causes the particles of soil with which the root hairs have united to be gradually dissolved at the points of union, so that they can then be taken up into the plant." From this it seemed that the most probable use of this viscid exudation was to render available the plant-food in the particles of soil in immediate contact with the root, and if such was the case these roots ought to give an acid reaction; at least this was what seemed a logical conclusion, so to test the matter the following experiments were planned and executed:

Small test-tubes were provided with rubber stoppers having holes just large enough to admit the air roots of the corn to be experimented on. I had decided before commencing that I must test with alkaline solutions in order that the supposed acid exudations might neutralize the alkali, and by using a drop of neutral cochineal solution in each tube, the time of neutralization would be shown by change of color from violet carmine to yellowish orange. Three tubes were prepared, (1) containing water made alkaline with ammonia; (2) water nearly neutral with just a trace of alkaline; and (3) water made acid with nitric acid (HNO_3). In each case a drop or two of cochineal solution was added, the stoppers were inserted, and at 6 P. M., August 28, one root from a corn plant was passed through the cork into the liquid. For each tube a root was selected which would present nearly two inches in contact with the alkaline or acidulated water; by this method the contents of the tubes were not in contact with the outer air, as the root in the rubber stopper made an air-tight joint. At 9 A. M., August 29, the two alkaline tubes, of which one was nearly neutral, were still alkaline; the one which was acid at the beginning of the experiment was decidedly alkaline.

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*Published in "Agricultural Science."

† Text-book of Structural and Physiological Botany, 1878, p. 165.

Believing there must be an error in the first experiment, a second experiment was prepared. Eleven tubes were used, as follows:

Tube 1 contained $\frac{1}{4}$ drop dilute nitric acid in 50 c. c. water.
" 2 " $\frac{1}{8}$ " " " " " " "
" 3 " $\frac{1}{4}$ " hydrochloric " " " "
" 4 " $\frac{1}{8}$ " " " " " "
" 5 " $\frac{1}{4}$ " dilute sulphuric acid in 50 c. c. water.
" 6 " $\frac{1}{8}$ " " " " " " "
" 7 " water strongly acidulated with oxalic acid.
" 8 " " " " " " "
" 9 " " " " " " "
" 10 " 4 drops ferric-chloride in 50 c. c. water.
" 11 " " " potassic ferro-cyanide in c. c. water.

Roots were placed in all these tubes, in each case pairs having the same acid being put on the same cornstalk, on roots near together.

The following results were recorded: August 30, at 9 A. M., or twenty-three hours after the commencement of the experiment, Nos. 2, 4, and 6 were alkaline. At the end of thirty-six hours Nos. 1, 3, and 5 were alkaline, proving that the more acid the tube contained, the longer the time required to neutralize it. At the end of fifty hours No. 11 containing potassic ferro-cyanide had turned blue, showing that in some way the iron from No. 10 had gained access to No. 11, but whether this came through the tissues of the plant or not is uncertain, as dissection at the time failed to show the characteristic reaction within the roots or stalk. Tubes 7, 8, and 9 never became alkaline, as the acid soon destroyed the vitality of the roots.

In No. 6 bubbles of gas passed through the liquid thrown off from near the end of the root. At this point two questions were suggested: Were the results obtained due to the passing off of some alkaline substance by the roots, or did the roots absorb the acid, leaving a salt in the water used, as the water invariably gave an alkaline reaction? To settle this point a chemical examination was made of what remained in the tubes after the experiment was over. No. 6 responded to baric chloride test for sulphuric acid, demonstrating that the result could not be due to the absorption of all of the acid used. Nos. 2 and 5 were tested with Nessler's reagent and gave abundant evidence of ammonia, and to make sure that this was not in the water or acid used a sample was prepared like that first employed; it gave no trace of ammonia, which indicated that in some way the root action supplied the ammonia shown in Nos. 2 and 5. Tube No. 10 had all of its iron precipitated as hydrated sesquioxide.

The conclusions recorded at the end of the above experiments were as follows: 1. Some alkaline substance is excreted by the roots; 2. This excretion is ammonia, certainly, with may be other substances; 3. Ferric-chloride is completely reduced to hydrated sesquioxide; 4. Iron is excreted by the roots (?).

Experiment No. 3 was next taken up. Eight tubes were used, containing the following solutions: 10′, Nessler's reagent; 13′, Nessler's reagent; N, potassic sulpho-cyanide; A, potassic sulpho-cyanide; H, ferric-chloride; Y, ferrous-sulphate; 1′, potassic ferro-cyanide; 2′, ferric-chloride. These were put in place September 1, at 4 P. M. The following observations were taken September 2, at 11 P. M., nineteen hours later: 10′ and 13′ gave the characteristic ammonia precipitate to a marked degree; in H part of the iron had precipitated as sesquioxide; A presented no trace of iron; 1′ gave no trace of iron, failing to confirm the observation on No. 11 in experiment 2; 2′ had the hydrated sesquioxide precipitate in the bottom of the tube, while there was absolutely no trace of iron in the superimposed liquid, showing that the root action had completely precipitated the iron.

Experiment 3 seems to have demonstrated that ammonia is given off by roots. Iron is not precipitated in a sulpho-cyanide solution, and apparently not to the ferro-cyanide. Iron in the sesquioxide form is wholly precipitated by root action.

It appearing evident that these roots excrete ammonia, it was thought that some quantitative results might be of value. The plan adopted was to use a measured quantity of a dilute standard sulphuric acid in flasks fitted with perforated rubber stoppers, the same as were used in the tubes.

In experiment No. 4, flask R was filled with 35 c. c. of standard sulphuric acid, 10 c. c. of which required 2 c. c. of standard soda solution to become neutralized.

Flask G was filled with 15 c. c. of the same acid as R, mixed with 15 c. c. of water; 10 c. c. of this mixture required 1 c. c. of soda to become neutralized. Roots were put in these flasks at 5 P. M., September 2. Forty hours later G was taken to the laboratory, having been subjected to the action of one root during this time. 8 c. c. of the acid now required 7 c. c. of soda to become neutralized; the original acid in R required 2 mgs. of nitrogen to neutralize the acid in 1 c. c., but as G was reduced one half in strength it required only 1 mg. of nitrogen, and as 1 c. c. of the 8 c. c. tested was neutralized, it follows that in the whole 30 c. c. in the flask there must have been 3.75 c. c. neutralized by the root action in forty hours, which would correspond to 3.75 mgs. of nitrogen or 4.55 mgs. of ammonia (NH_3).

At the end of forty-eight hours R was examined; 10 c. c. required 1.75 c. c. of soda to neutralize, demonstrating that 1.25 c. c. in 10 had neutralized, or 4.37 c. c. in the whole flask, which equals 10.5 mgs. of ammonia in forty-eight hours. However, this flask contained two roots, so that each root neutralized 5.25 mgs., or at the rate of 11 mgs. per hour. By the same method of reasoning we find that G excreted .11 mgs. of ammonia per hour.

In the next experiment a different strength of sulphuric acid was used. In X were placed 30 c. c. of acid containing .5 mgs. of nitrogen in 1 c. c. The root was placed in this September 4, at 12 M. In Y were 30 c. c., containing 1 mg. of nitrogen in 1 c. c. The root was placed in this September 5, at 11 A. M. At the end of five hours X was taken to the laboratory and examined, and it was found that .3 mgs. per hour had been excreted. After twenty-three hours Y was found to have excreted at the rate of .06 mgs. per hour. The four quantitative tests gave the following amounts of ammonia excreted per hour: G .11, R .11, X .30, and Y .06 mgs. It would seem that in X there might have been some error, but as the period available for this work was nearly past, it was impossible to duplicate results with the acid used in X.

In one case a root taken up after it had penetrated the soil six inches was thoroughly washed and inserted in a tube containing acid, and the whole then covered with soil. In this case the same reduction of acid was observed in about the same ratio to the time of contact.

On September 15 a test-tube was about half filled with the viscid transparent substance from the roots, and subjected to chemical tests. The quantity was too small to make a quantitative analysis, but the following characteristics were recorded: Specific gravity slightly less than water; insoluble in hot or cold water, ether, alcohol, and cold dilute nitric acid; soluble in hot dilute nitric acid. Hot caustic potash turns it yellow, but does not completely dissolve it. The viscid substance was turned yellow by strong nitric acid, and upon the addition of ammonium hydrate this color changed to orange, indicating that it is an albuminoid.

The above are the records of the work done thus far. I have used the term excretion, although there is good authority for rejecting this word as applied to plants. Thus, Johnson says: "It has been supposed that the roots of plants perform a function of excretion, the reverse of absorption . . . In the light of newer investigations touching the structure of roots and their adaption to the medium which happens to invest them, we may well doubt whether agricultural plants in the healthy state excrete any solid or liquid matters whatever from their roots." Again the same author says: "Under certain circumstances small quantities of mineral salts may indeed diffuse out of root-cells into the water of the soil. This is, however, no physiological action, but a purely physical process." Carpenter in his "Comparative Physiology," after describing the phenomenon of osmosis and showing the reason why water of the soil passes into the dense cell-sap of the rootlets, adds: "If this be a true explanation of the phenomenon, a counter-current ought to exist and an *exosmosis* of the fluids within the system should take place into the surrounding medium. That this is actually the case would appear from the fact that an excretion of the peculiar products of the species may be often detected around the roots of the plant. . . . It has been imagined that plants have the power of throwing off from their roots substances injurious to their economy, and the matter thus separated has been regarded as real excretion. . . . It is probably to be regarded less an excretion than as a simple act of *exosmosis*, necessarily connected with the endosmose by which water is taken up into the organism."

On the other hand, Prof. Vines, in "Encyclopædia Britannica," says: "The excretion of the earthy carbonates in solution is most commonly effected by means of a well-developed gland. . . . In certain ferns, for instance, scales of calcium carbonate are found on depressions in the surface of the leaves." Again he says: "Some of the carbon dioxide may combine with earthy bases to form carbonates, which are either retained in the plant or excreted in solution. . . . The glands of their [the carnivorous plants] leaves excrete a watery liquid which holds in solution a peptic ferment and one or more organized acids. . . . Many of the waste products are not excreted, but remain in the plant."

The oak tree, according to Carpenter, impregnates the soil with tannin, so that other trees do not thrive when planted where oaks have stood.

Thus these few quotations serve to show that plants do throw off substances which are waste products, and therefore the term excretion seems applicable.

It may be claimed that in my quantitative work I have drawn wrong conclusions, for the loss of acid may be the result of abstraction by the root, or it may be neutralized by ammonia, or be a combination of the two; but, from the evidence of other experiments, it seems clear that ammonia is given off, and in quite liberal quantities. From lack of roots to work upon I was obliged to stop the experiments before this point could be finally decided. Why ammonia is given off at time of flowering is a question I do not care to express views upon, and whether there are practical lessons to be learned from these observations, if subsequent experiments prove them true, is yet to be seen. It may be that this phenomenon is already known and explained, but if so I am unable to find the record, and it is with hope that light may come that I have communicated the results of these experiments.

In addition to the above one root was placed in a flask of 200 c. c. capacity, which was filled with water in which was dissolved 1 gramme of di-sodic-hydric phosphate (Na_2HPO_4); the root when inserted in the stopper of the flask was 2½ inches long. After fifteen days the flask was removed, the root being 7 inches long, and covered with fine rootlets. It was found by chemical analysis, made by Prof. Blanpied, that 126 mgs. of the original 1,000, or 12½ per cent of the total phosphoric acid, had been absorbed by this root, and no doubt contributed to the requirements of the plant.

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VALUATION AND TAXATION

OF THE

STATE OF NEW HAMPSHIRE,

WITH

EQUALIZATION AND APPORTIONMENT

OF

STATE TAX FOR THE YEAR 1887.

COMPILED BY THE SECRETARY OF THE STATE BOARD OF EQUALIZATION.

BOARD:

JOHN M. HILL, *Chairman*	CONCORD.
CHARLES A. DOLE, *Secretary*	LEBANON.
JEWETT CONNOR	EXETER.
JOHN M, PARKER	GOFFSTOWN.
EDWIN W. DREW	STEWARTSTOWN (P. O., COLEBROOK).

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

STATE BOARD OF EQUALIZATION.

CONCORD, July 29, 1887.

The State Board of Equalization, as required by chapter 61 of the General Laws, have examined the inventories of the several cities and towns in the State as taken in April last and returned to the secretary of state, and have considered the reports of the county commissioners upon their inspection, in September last, of the real and personal estate in their respective counties, and upon such examination and consideration the Board determine that the assessments, as given in said inventories, are relatively unequal, and they have therefore equalized the same, by adding to or deducting from the aggregate valuations of many of the cities and towns the amounts set against them in the following table No. 2, to produce relative, equal, and uniform valuations between all. And we hereby certify that the column in table No. 2, under the head of "equalized valuation," contains the valuations as thus equalized by the Board.

We herewith return the same, together with our usual tabulations of the inventories, to the secretary of state.

JOHN M. HILL, *Chairman.*

C. A. DOLE, *Secretary.*

In performing our duty in equalizing the inventories, we have endeavored to deal justly with all, not having added to any with the idea of doomage for what might seem, in some cases, to have been an intentional undervaluation on the part of the assessors, for the purpose of avoiding a just proportion of the state and county tax, but only having made such additions as in our judgment seemed equitable, having relied largely, as we were obliged to, upon the reports and recommendations of the commissioners. In quite a number of instances, where small amounts are added, it is done to bring up the valuation of the live stock to the average in the county.

The total equalized valuation of the State is $13,924,074 in excess of the same in 1883. It will be found, upon comparing the report of this year with that of four years ago, that this increase is in about two thirds of the cities and towns, while in the remaining third there is a decrease, which is mainly in the agricultural towns, and counties more generally containing such towns, as in Sullivan county, where out of fifteen towns ten have decreased in valuation, and in Carroll county with eighteen towns, one half have decreased.

And thus the showing for our manufacturing towns and business centers is quite favorable; still we must again say that, in our judgment, the property of a majority of the manufacturing corporations in the State is yet largely undervalued, and the best remedy we can suggest is legislation which shall take the assessment of such property from the hands of the local assessors, and place it in charge of an outside board.

The commissioners having been requested by the Board to ascertain how generally individual inventories were sworn to, report that they generally were sworn to, yet, in one large county in three towns only was it done, and, in another large county, only in about half of the towns.

There should be some legislation to remedy this, or the law requiring such oath should be repealed.

TABLE No. 1.

Number of Ratable Polls, Valuation, and Amount of Taxes in each Town, as returned by the Assessors for 1887.

ROCKINGHAM COUNTY.

TOWNS.	POLLS.		ASSES AND MULES.		HOGS.		CARRIAGES.		Stock in Public Funds.	Stock in Banks and other Corporations in this State.	Stock in Corporations out of this State.	Surplus Capital of Banking Institutions.
	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.				
Atkinson	136	$13,600			26	$275	20	$1,140	$9,000			
Auburn	192	19,200			10	103			1,100			
Brentwood	172	17,200			35	495	12	750	1,000	$2,300		
Candia	295	29,500	1	$20	5	24				700		
Chester	267	26,700			17	154	10	625	200	6,800		
Danville	177	17,700					10	914				
Deerfield	421	42,100			54	386	13	784	3,900	3,000		
Derry	588	58,800	1	76	48	530	41	2,272	3,000	28,580		$4,116
East Kingston	144	14,400			15	100	18	1,132		100		
Epping	451	45,100			9	60	28	1,610	2,600	11,900		
Exeter	770	77,000			12	122	87	8,382	105,700	57,000		
Fremont	161	16,100			12	92			300	1,000		
Greenland	165	16,500	5	125			12	730		23,900		
Hampstead	255	25,500			7	61	12	775		5,600		
Hampton	346	34,600			2	25	24	1,710	1,500	2,400		
Hampton Falls	166	16,600			19	101	26	1,730	3,500	500		600
Kensington	152	15,200			11	84	13	709		4,400		

Kingston..........	319	31,900	....	.. ..	4	30	8	430	....	2,700	....	....
Londonderry	368	36,800	....	......	...	.....	18	1,050	100	9,600	....	....
Newcastle.........	159	15,900	...	......	32	200	52	4,326	....	1,400	....	....
Newington	99	9,900	...	......	....	......	5	250	....	4,500	....	....
Newmarket.........	499	49,900	....	.....	10	56	30	1,872	....	21,100	....	11,000
Newton	319	31,900	....	......	21	115	11	725	....	....	....	....
North Hampton....	212	21,200	....	......	....	......	43	2,909	6,100	300	....	....
Northwood........	376	37,600	....	.....	5	35	17	1,020	....	9,700	....	....
Nottingham........	288	28,800	....	......	4	28	1	74	2,210	3,100	$200	....
Plaistow...........	238	23,800	....	......	27	178	8	610	....	....	....	....
Portsmouth........	2,122	212,200	....	......	38	380	258	31,500	100,810	800,950	2,240	204,000
Raymond.....	331	33,100	....	......	6	62	...	....	....	....	....	....
Rye	263	26,300	....	......	16	152	54	3,792	....	10,900	....	....
Salem..............	464	46,400	....	......	10	170	20	1,244	....	700	....	....
Sandown...........	134	13,400	....	......	4	18	7	400	....	310	....	....
Seabrook..........	408	40,800	....	......	2	15	5	290	....	....	....	....
South Hampton....	92	9,200	...	......	5	41	5	280	....	....	....	....
South Newmarket .	259	25,900	....	......	....	......	24	1,466	....	6,150	....	......
Stratham....... ...	162	16,200	3	70	22	151	14	895	....	46,500	2,200	863
Windham..........	173	17,300	...	......	153	1,204	7	600	....	....	....	....
Totals	12,143	$1,214,300	10	$291	641	$5,447	913	$76,996	$241,020	$1,066,090	$4,640	$220,579

TABLE No. 1 — *Continued.*

STRAFFORD COUNTY.

TOWNS.	POLLS.		ASSES AND MULES.		HOGS.		CARRIAGES.		Stock in Public Funds.	Stock in Banks and other Corporations in this State.	Stock in Corporations out of this State.	Surplus Capital of Banking Institutions.
	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.				
Barrington	383	$38,300	2	$150	18	$123	6	$410		$7,000		
Dover	3,002	300,200			37	524	224	24,463	$27,570	254,800		$74,900
Durham	224	22,400			9	90	32	2,790	99,500	28,044		
Farmington	1,034	103,400	1	40			67	5,963		22,500		
Lee	190	19,000			2	23	9	648	3,000	6,907	$3,000	50
Madbury	112	11,200			7	63	5	285	1,100	16,400		
Middleton	68	6,800			1	15	2	125				
Milton	404	40,400			6	46	13	885		11,400		
New Durham	199	19,900	5	225	9	80	6	300		300		
Rochester	1,879	187,900	1	30	15	134	47	3,410		93,300		2,000
Rollinsford	400	40,000					35	3,110	15,800	56,400		8,000
Somersworth	1,180	118,000			5	50		6,872	150	180,700		45,000
Strafford	375	37,500			23	228				2,000		
Totals	9,450	$945,000	9	$445	132	$1,376	446	$49,261	$147,120	$679,751	$3,000	$129,950

BELKNAP COUNTY.

Alton........	394	$39,400	....	......	67	$378	16	$1,185	....	$5,000	....	....
Barnstead	338	33,800	.. .	......	4	28	9	555	....	400	....	....
Belmont	294	29,400	....	......	15	94	15	942	$1,000	18,960	....	....
Center Harbor. ...	128	12,800	....	......	19	146	23	1,800	....	525	....	....
Gilford............	864	86,400	....	......	32	206	35	2,344	27,300	5,600	....	....
Gllmanton.........	386	38,600	....	......	4	26	1	100	....	4,000	....	....
Laconia...........	1,454	145,400	....	......	32	312	53	5,844	4,600	116.400	....	....
Meredith..........	505	50,500	....	......	30	169	36	2,705	....	6,200	....	....
New Hampton.....	249	24,900	.. .	.... ..	25	130	4	225	....	300	....	....
Sanbornton........	259	25,900	1	$26	16	104	....	....	....	1,100	....	... . ..
Tiiton	451	45,100	....	......	17	164	49	3,865	6,900	21,800	....	....
Totals	5,322	$532,200	1	$26	261	$1,757	241	$19,565	$39,800	$180,285		

TABLE No. 1 — *Continued.* CARROLL COUNTY.

TOWNS.	POLLS.		ASSES AND MULES.		HOGS.		CARRIAGES.		Stock in Public Funds.	Stock in Banks and other Corporations in this State.	Stock in Corporations out of this State.	Surplus Capital of Banking Institutions.
	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.				
Albany	77	$7,700										
Bartlett	294	29,400	1	$50			23	$2,000				
Brookfield	107	10,700					2	150		$100		
Chatham	95	9,500					7	350				
Conway	632	63,200			14	$76	59	4,356		1,500		
Eaton	141	14,100										
Effingham	190	19,000								600		
Freedom	194	19,400			7	31	22	1,133	$1,500	4,000		
Hart's Location	37	3,700									$1,000	
Jackson	126	12,600			20	140	36	3,566				
Madison	154	15,400					6	328				
Moultonborough	302	30,200			2	16	16	875		200		
Ossipee	443	44,300			5	60	8	620		400		
Sandwich	370	37,000			4	32	29	1,860	1,100	600		
Tamworth	298	29,800					10	710	4,000	200		
Tuftonborough	231	23,100								1,600		
Wakefield	387	38,700					25	1,656		14,772		
Wolfeborough	641	64,100	6	338	15	118	66	3,590	1,100	65,350		$6,500
Totals	4,719	$471,900	7	$388	67	$473	309	$21,194	$7,700	$89,322	$1,000	$6,500

MERRIMACK COUNTY.

Allenstown	298	$29,800	2	$100	6	$28	14	$1,070		$1,400		
Andover	307	30,700			19	180	11	800		18,200		
Boscawen	318	31,800			25	309	20	1,215	$7,200	6,300		
Bow	198	19,800			9	107	14	800		7,200		
Bradford	266	26,600			32	188	20	1,150	10,300	12,500		
Canterbury	243	24,300			19	128	14	796		700		
Chichester	175	17,500			2	20				14,800		
Concord	3,936	393,600			83	517	363	29,400	244,700	305,950	$13,500	$215,533
Danbury	185	18,500			12	56						
Dunbarton	176	17,600			9	80	6	300	100	4,700		
Epsom	255	25,500			27	189	17	870		26,200		
Franklin	1,052	105,200			55	388	98	7,278		49,000	800	150
Henniker	360	36,000			21	119	22	1,309	6,200	6,400	2,800	
Hill	164	16,400			9	68	5	294		1,000		
Hooksett	330	33,000			29	195	11	600		6,582		
Hopkinton	436	43,600			33	320	21	1,372	14,500	25,950	200	
Loudon	325	32,500			33	243	14	895	3,000	2,000		
Newbury	138	13,800			9	36	8	296	2,500	3,440		
New London	210	21,000			6	62	21	1,475	7,000	3,300		100
Northfield	274	27,400			16	97	16	891	5,500	3,000		
Pembroke	564	56,400	4	310	11	96	48	3,670	54,700	25,300	5,500	
Pittsfield	597	59,700			12	115	61	3,680	1,000	6,300	200	9,050
Salisbury	194	19,400			4	32	6	300	1,100			
Sutton	249	24,900			2	11	13	846	2,700	1,000		
Warner	416	41,600	2	80	8	76	29	2,003	7,400	7,900	6,500	
Webster	156	15,600			9	50	7	470	2,900		1,500	
Wilmot	234	23,400			9	36	8	465		2,500		
Totals	12,056	$1,205,600	8	$490	509	$3,746	867	$62,245	$370,800	$540,620	$31,000	$224,833

TABLE No. 1 — *Continued.*

HILLSBOROUGH COUNTY.

TOWNS.	POLLS.		ASSES AND MULES.		HOGS.		CARRIAGES.		Stock in Public Funds.	Stock in Banks and other Corporations in this State.	Stock in Corporations out of this State.	Surplus Capital of Banking Institutions.
	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.				
Amherst	282	$28,200	....	......	48	$470	50	$3,900	$500	$6,600	....	....
Antrim	355	35,500	...	......	22	160	22	1,190	8,000	15,100	....	....
Bedford	308	30,800	....	......	60	469	31	2,220	....	1,500	$2,820	$500
Bennington	150	15,000	....	......	.. .	......	7	390	600	12,400	....	....
Brookline	175	17,500	....	.....	....	......	15	970	....	760	1,000	....
Deering	157	15,700	....	......	3	12	....	....	2,400	700	....	....
Francestown	227	22,700	....	......	17	194	18	1,315	600	22,400	... ...	10,552
Goffstown	491	49,100	....	......	78	537	24	1,490	4,802	18,800	....	....
Greenfield	161	16,100	. ..	......	3	31	14	940	1.000	3,300	....	....
Greenville	257	25,700	....	......	16	98	20	1,432	....	....	....	....
Hancock	176	17,600	....	.. ...	7	59	9	710	200	12,200	....	....
Hillsborough	570	57,000	...	......	27	306	50	2,976	....	6,500	1,000	8,000
Hollis	282	28,200	....	......	23	219	28	1,775	400	27,110	....	....
Hudson	321	32,100	....	......	12	78	21	1,556	....	19,500	....	....
Litchfield	81	8,100	....	......	20	88	6	375	....	17,900	....	....
Lyndeborough	200	20,000	1	$30	4	56	...	....	....	1,000	1,000	....
Manchester	8,996	899,600	....	......	13	254	....	53,772	53,048	340,500	....	156,166
Mason	165	16,500	....	......	6	90	15	1,085	....	....	....	....

Merrimack........	235	23,500	....	......	....	......	4	350	....	$10,520	....	....
Milford..........	748	74,800	....	......	1	10	109	8,430	1,550	65,500	....	....
Mont Vernon......	144	14,400	1	18	4	28	16	1,156	400	300	500	....
Nashua...........	3,931	393,100	....	......	42	450	....	22,750	35,000	195,780	30,850	43,600
New Boston.......	262	26,200	....	......	26	216	7	600	900	6,200	....	....
New Ipswich......	253	25,300	....	......	5	30	....	680	....	....	....	....
Pelham...........	234	23,400	....	......	40	408	13	1,160	....	2,800	....	....
Peterborough......	540	54,000	5	225	25	224	65	4,945	23,000	69,300	....	29,687
Sharon...........	41	4,100	....	......	....	......	6	300	....	....	....	....
Temple...........	99	9,900	....	......	10	80	....	....	....	2,400	....	....
Weare............	458	45,800	....	......	15	128	18	1,184	3,600	2,500	....	....
Wilton...........	425	42,500	....	......	276	1,912	38	3,385	22,700	16,160	....	....
Windsor..........	16	1,600	....	......	6	31	....	......	......	....	....	....
Totals........	20,740	$2,074,000	7	$273	809	$6,638	606	$121,036	$158,700	$877,730	$37,170	$248,505

TABLE No. 1 — *Continued.* CHESHIRE COUNTY.

TOWNS.	POLLS.		ASSES AND MULES.		HOGS.		CARRIAGES.		Stock in Public Funds.	Stock in Banks and other Corporations in this State.	Stock in Corporations out of this State.	Surplus Capital of Banking Institutions.
	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.				
Alstead	244	$24,400	....	....	11	$95	22	$1,651	$1,400	$23,200	....	....
Chesterfield	333	33,300	....	....	21	140	16	980	....	4,600	....	....
Dublin	114	11,400	....	....	....	....	51	3,910	1,600	8,300	....	....
Fitzwilliam	272	27,200	....	....	8	90	20	1,505	1,975	5,350	....	....
Gilsum	196	19,600	....	....	3	24	28	1,756	....	11,936	$200	....
Harrisville	170	17,000	....	....	3	15	15	1,105	....	1,600	....	....
Hinsdale	500	50,000	....	....	35	326	51	3,865	....	5,800	....	....
Jaffrey	370	37,000	....	....	13	102	33	2,464	9,700	73,250	....	$3,000
Keene	1,961	196,100	....	....	20	170	160	15,155	132,250	488,300	....	159,905
Marlborough	421	42,100	....	....	2	32	9	564	....	6,900	....	....
Marlow	174	17,400	....	....	29	266	29	2,114	....	48,550	4,700	....
Nelson	87	8,700	....	....	....	....	6	358	....	....	....	....
Richmond	163	16,300	....	....	6	78	7	425	....	1,300	....	....
Rindge	258	25,800	....	....	24	229	48	3,580	....	9,400	....	....
Roxbury	34	3,400	....	....	....	....	1	60	....	....	....	....
Stoddard	107	10,700	....	....	24	114	4	200	....	3,000	....	....
Sullivan	86	8,600	....	....	1	10	5	370	....	16,900	....	....
Surry	68	6,800	....	....	4	42	5	310	....	....	....	....
Swanzey	418	41,800	....	....	26	313	44	2,530	3,450	6,100	....	....
Troy	206	20,600	....	....	....	....	13	810	....	2,300	....	....

Walpole	570	57,000	....	......	102	860	15	1,228	2,800	31,350	4,600	7,000
Westmoreland	252	25,200	....	......	40	277	22	1,350	800	5,200	....	....
Winchester	665	66,500	....	......	44	342	44	3,340	4,400	80,000	4,000	27,888
Totals	7,669	$766,900	....	......	416	$3,525	648	$49,630	$158,375	$833,336	$13,500	$197,793

SULLIVAN COUNTY.

Acworth	219	$21,900	....	.....	15	$116	6	$375	$560	$7,700	$1,000	....
Charlestown	407	40,700	...	......	55	382	....	3,335	4,850	53,970	....	....
Claremont	1,133	113,300	....	......	52	488	151	10,954	....	93,400	....	....
Cornish	274	27,400	2	$60	10	64	13	710	1,000	4,600	1,000	....
Croydon	146	14,600	....	......	4	23	11	560	....	14,155	....	....
Goshen	126	12,600	....	......	6	54	4	268	1,200	5,400	....	....
Grantham	118	11,800	....	......	....	......	20	1,270	....	4,100	....	....
Langdon	97	9,700	2	120	10	72	4	286	1,450	8,300	....	....
Lempster	142	14,200	1	80	4	22	7	443	500	300	....	....
Newport	683	68,300	3	230	52	406	89	6,862	8,100	97,300	500	$100
Plainfield	297	29,700	....	......	21	165	29	1,872	1,600	6,586	200	....
Springfield	156	15,600	....	......	5	34	1	65	....	1,300	....	....
Sunapee	210	21,000	....	......	10	50	12	686	4,100	5,200	....	....
Unity	184	18,400	....	......	30	253	8	495	....	2,900	....	....
Washington	178	17,800	9	1,800	9	44	23	1,370	....	....	....	....
Totals	4,370	$437,000	17	$2,290	283	$2,173	378	$29,551	$23,360	$305,211	$2,700	$100

TABLE No. 1 — *Continued.*

GRAFTON COUNTY.

TOWNS.	POLLS.		ASSES AND MULES.		HOGS.		CARRIAGES.		Stock in Public Funds.	Stock in Banks and other Corporations in this State.	Stock in Corporations out of this State.	Surplus Capital of Banking Institutions.
	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.				
Alexandria	195	$19,500	....	......	4	$26	9	$650	....	....	....	....
Ashland	317	31,700	....	......	....	......	24	1,807	....	....	....	....
Bath	258	25,800	....	......	41	317	3	400	$100	$5,800	....	....
Benton	71	7,100	....	......	5	26	....	....	....	....	....	....
Bethlehem	360	36,000	*10	$400	53	339	....	5,685	....	....	....	....
Bridgewater	99	9,900	....	......	15	61	2	100	....	....	....	....
Bristol	381	38,100	....	......	14	106	30	1,962	....	11,800	....	....
Campton	284	28,400	....	......	9	64	42	2,816	....	6,700	....	....
Canaan	349	34,900	....	......	12	83	29	1,746	....	1,400	....	....
Dorchester	91	9,100	....	......	1	6	....	....	....	....	....	....
Ellsworth	51	5,100	....	......	....	......	....	....	....	....	....	... .
Enfield	396	39,600	....	......	50	375	27	2,200	12,500	10,900	$600	....
Franconia	145	14,500	....	......	6	30	23	3,125	....	6,400	....	....
Grafton	250	25,000	....	......	7	42	6	310	....	900	....	....
Groton	173	17,300	....	......	3	16	3	190	....	....	....	$28
Hanover	449	44,900	....	......	5	44	13	834	20,200	11,800	2,100	....
Haverhill	681	68,100	....	......	67	456	55	3,317	10,800	8,500	2,500	... .
Hebron	85	8,500	....	......	1	10	10	536	.. ..	....	....	....

Holderness	168	16,800			14	84	7	422				
Landaff	126	12,600			14	76	14	752		3,500		
Lebanon	835	83,500			61	424	88	7,191	11,260	73,450	500	
Lincoln	20	2,000			1	8						
Lisbon	546	54,600			30	171	64	5,189				
Littleton	874	87,400			30	224	66	5,661		40,300	9,000	12,000
Lyman	140	14,000			17	74						
Lyme	278	27,800	2	150	24	170	5	305				
Monroe	136	13,600			12	84	14	934	1,000			
Orange	84	8,400			2	14						
Orford	251	25,100			45	268	13	675	1,500	600		
Piermont	190	19,000			22	172	12	804				
Plymouth	469	46,900			29	144	53	3,060		41,100		
Rumney	279	27,900			7	60	6	335		6,800		
Thornton	184	18,400			4	18	1	100				
Warren	224	22,400			5	46	12	644	3,600	500		
Waterville	9	900						50				
Wentworth	218	21,800			8	54			1,000	500		
Woodstock	98	9,800			5	46	19	1,150				
Easton	85	8,500					1	60				
Livermore	33	3,300			7	40						
Totals	9,882	$988,200	12	$550	630	$4,178	651	$53,010	$61,960	$230,950	$14,700	$12,028

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* Shetland ponies.

TABLE No. 1 — *Continued.* COOS COUNTY.

TOWNS.	POLLS.		ASSES AND MULES.		HOGS.		CARRIAGES.		Stock in Public Funds.	Stock in Banks and other Corporations in this State.	Stock in Corporations out of this State.	Surplus Capital of Banking Institutions.
	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.				
Berlin	962	$96,200	5	$200	19	$140	25	$1,430	....	....	....	....
Carroll	200	20,000	....	....	8	64	42	3,030	....	....	....	....
Clarksville	82	8,200	....	....	3	18	....	....	....	....	....	....
Colebrook	447	44,700	....	....	85	440	15	805	$1,000	$10,100	....	....
Columbia	169	16,900	....	....	23	120	10	520	....	....	....	....
Dalton	140	14,000	....	....	....	....	....	....	....	....	....	....
Dummer	125	12,500	1	100	1	6	1	60	....	....	....	....
Errol	51	5,100	....	....	2	8	6	334	....	1,200	....	....
Gorham	442	44,200	....	....	7	48	48	2,964	....	200	....	....
Jefferson	308	30,800	....	....	3	18	37	2,400	....	....	....	....
Lancaster	678	67,800	....	....	89	478	75	4,810	....	....	....	....
Milan	252	25,200	....	....	15	78	6	330	....	....	....	....
Northumberland	343	34,300	....	....	50	304	1	65	....	200	....	....
Pittsburg	175	17,500	....	....	18	110	13	710	....	....	....	....
Randolph	47	4,700	....	....	5	40	6	400	....	....	....	....
Shelburne	85	8,500	....	....	8	40	14	1,456	....	....	....	....
Stark	204	20,400	....	....	18	148	18	1,194	....	....	....	....
Stewartstown	269	26,900	1	20	40	264	8	500	....	800	....	....
Stratford	299	29,900	....	....	43	202	48	2,900	....	5,900	....	....
Wentworth's Loc'n*	....	....	....	....	....	....	....	....	....	....	....	....
Whitefield	491	49,100	....	....	21	135	59	3,300	....	2,700	....	....
Totals	5,769	$576,900	7	$320	458	$2,661	432	$27,208	$1,000	$21,100	....	....

* No inventory returned.

SUMMARY.

COUNTIES.	POLLS.		ASSES AND MULES.		HOGS.		CARRIAGES		Stock in Public Funds.	Stock in Banks and other Corporations in this State.	Stock in Corporations out of this State.	Surplus Capital of Banking Institutions.
	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.	Number.	Valuation.				
Rockingham ..	12,143	$1,214,300	10	$291	641	$5,447	913	$76,996	$241,020	$1,066,090	$4,640	$220,579
Strafford......	9,450	945,000	9	445	132	1,376	446	49,261	147,120	679,751	3,000	129,950
Belknap	5,322	532,200	1	26	261	1,757	241	19,565	39,800	180,285	....	....
Carroll... ...	4,719	471,900	7	388	67	473	309	21,194	7,700	89,321	1,000	6,500
Merrimack ...	12,056	1,205,600	8	490	509	3,746	867	62,245	370,800	540,620	31,000	224,833
Hillsborough .	20,740	2,074,000	7	273	809	6,638	606	121,036	158,700	877,730	37,170	248,505
Cheshire......	7,669	766,900	....	......	416	3,525	648	49,630	158,375	833,336	13,500	197,793
Sullivan	4,370	437,000	17	2,290	283	2,173	378	29,551	23,360	305,211	2,700	100
Grafton	9,882	988,200	12	550	630	4,178	651	53,010	61,960	230,950	14,700	12,028
Coös.........	5,769	576,900	7	320	458	2,661	432	27,208	1,000	21,100	....	....
Totals....	92,120	$9,212,000	78	$5,073	4,206	$31,974	5,491	$509,696	$1,209,835	$4,824,394	$107,710	$1,040,288

TABLE No. 1 — *Continued.*

ROCKINGHAM COUNTY.

TOWNS.	Money on hand, at Interest or on Deposit.	Stock in Trade.	Mills and their Machinery.	Lands and Buildings.	Amount of Inventory.	Amount of Taxes.	Rate per cent.
Atkinson	$17,850	$3,490	$300	$236,950	$303,970	$3,289.92	1.08
Auburn	8,959	7,483	4,729	209,980	272,334	3,567.57	1.31
Brentwood	17,971	15,150	15,350	210,870	307,516	2,767.64	.90
Candia	4,850	7,400	1,200	288,107	360,992	6,175.00	1.71
Chester	*16,135	6,294	2,950	306,296	392,069	6,142.03	1.57
Danville	1,956	10,270	2,400	153,318	200,216	2,943.18	1.47
Deerfield	18,907	14,763	4,450	368,994	513.476	6,880.00	1.34
Derry	19,876	31,260	10,800	608,596	822,700	7,929.25	.96
East Kingston	3,100	11,980	4,800	187,066	237,998	2,834.36	1.19
Epping	30,071	32,025	11,700	505,600	678,178	10,788.76	1.59
Exeter	†388,908	96,250	120,000	1,778,460	2,679,708	36,711.99	1.37
Fremont	100	8,000	11,400	195,122	249,105	2,239.76	.89
Greenland	100	325	2,000	300,705	368,900	4,699.88	1.27
Hampstead	25,535	14,700	4,300	271,622	365,982	4,570.26	1.25
Hampton	34,515	7,250	1,020	548,892	666,530	7,060.68	1.06
Hampton Falls	7,842	2,200	600	225,005	286,289	4,237.07	1.48
Kensington	3,685	1,280	225	218,116	269,372	2,823.20	1.05
Kingston	28,125	13,275	2,450	271,679	372,343	5,889.22	1.58

Londonderry	31,068	9,565	6,300	431,269	576,177	7,259.83	1.26
Newcastle...........	124	7,674	....	117,564	153,140	3,792.48	2.47
Newington	2,156	....	....	176,470	208,076	2,077.63	1.00
Newmarket	11,052	91,850	288,200	578,696	1,078,734	13,203.70	1.22
Newton.	6,370	28,110	7,875	290,336	386,734	6,187.74	1.60
North Hampton......	9,915	4,100	2,448	466,600	551,547	5,830.71	1.06
Northwood..........	36,484	14,160	5,650	356,177	495,255	7,908.47	1.58
Nottingham.........	8,784	22,634	17,280	260,606	373,158	5,583.30	1.49
Plaistow	1,600	13,450	2,200	222,216	283,760	4,256.40	1.50
Portsmouth	188,756	529,995	....	4,192,949	6,353,925	108,698.18	1.75
Raymond	7,346	12,930	6,532	263,700	342,618	3,922.50	1.14
Rye.	3,440	1,900	1,050	466,079	547,858	6,683.94	1.22
Salem...............	4,650	19,450	3,900	474,698	593,688	9,183.07	1.55
Sandown....	2,800	8,175	5,285	137,175	180,142	3,406.19	1.89
Seabrook	1,950	5,955	400	218,408	279,590	6,373.95	2.28
South Hampton.... .	6,280	2,125	....	197,839	228,481	2,102.01	.92
South Newmarket....	15,806	34,500	1,318	275,084	374,100	5,662.68	1.51
Stratham	32,250	2,160	3,073	430,447	571,411	4,864.12	.85
Windham...........	6,710	10,706	9,100	283,760	358,335	2,866.68	.80
Totals	$1,006,026	$1,102,834	$561,285	$16,725,451	$23,264,407	$331,313.36	

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* Including $2,100 doomage. † Including $228,500 doomage.

TABLE No. 1 — *Continued.*

STRAFFORD COUNTY.

TOWNS.	Money on hand, at Interest or on Deposit.	Stock in Trade.	Mills and their Machinery.	Lands and Buildings.	Amount of Inventory.	Amount of Taxes.	Rate per cent.
Barrington	$7,699	$22,294	$7,000	$269,494	$502,968	$11,000.00	2.19
Dover	342,790	1,129,127	970,800	4,984,658	8,228,740	115,202.36	1.40
Durham	24,046	3,200	650	347,614	562,838	5,741.83	1.02
Farmington	379,525	71,029	10,100	998,090	1,655,729	18,689.99	1.13
Lee	26,422	5,514	3,394	227,930	332,814	2,974.69	.89
Madbury	31,113	450	....	181,016	263,737	1,879.53	.71
Middleton	....	100	....	91,090	106,918	4,704.40	4·40
Milton	14,400	23,350	26,400	355,620	506,610	5,319.20	1.05
New Durham	400	2,450	3,200	177,568	228,116	3,886.01	1.70
Rochester	44,533	410,908	117,000	1,906,454	2,858,603	39,160.84	1.37
Rollinsford	29,024	51,133	349,334	549,581	1,129,142	8,752.32	.77
Somersworth	5,900	222,852	843,000	1,250,964	2,713,440	42,208.14	1.55
Strafford	3,500	3,030	1,100	405,929	503,120	12,251.63	2.43
Totals	$909,352	$1,945,437	$2,331,978	$11,746,008	$19,592,775	$271,770.94	

BELKNAP COUNTY.

Alton..............	$6,875	$11,650	$2,100	$396,068	$514,720	$9,007.60	1.75
Barnstead...........	5,183	2,945	5,875	372,633	473,606	7,214.00	1.52
Belmont...........	21,940	10,660	24,150	355,634	500,410	8,506.68	1.70
Center Harbor.......	8,180	11,930	....	169,447	224,184	3,456.77	1.54
Gilford.............	38,136	44,576	31,300	993,144	1,284,788	24,672.80	1.92
Gilmanton..........	9,822	9,030	6,054	415,632	543,036	11,856.28	2.18
Laconia.............	72,080	169,964	210,350	1,398,944	2,173,644	36,125.00	1.66
Meredith............	27,050	29,500	12,500	475,364	656,303	11,384.06	1.73
New Hampton.......	5,430	7,820	300	250,420	324,335	8,108.37	2.50
Sanbornton..........	14,074	1,656	....	288,568	377,087	7,161.71	1.90
Tilton.............	38,029	55,250	51,650	441,435	692,693	9,740.15	1.41
Totals..........	$246,799	$354,981	$344,279	$5,557,289	$7,764,806	$137,233.42	

TABLE No. 1 — *Continued.* CARROLL COUNTY.

TOWNS.	Money on hand, at Interest or on Deposit.	Stock in Trade.	Mills and their Machinery.	Lands and Buildings.	Amount of Inventory.	Amount of Taxes.	Rate per cent.
Albany	$332	....	$8,100	$61,374	$82,758	$3,025.35	3.65
Bartlett	3,800	$15,890	12,700	200,763	290,603	5,378.35	1.85
Brookfield	5,094	4,620	2,000	102,778	140,342	3,508.55	2.50
Chatham	200	40	800	77,812	103,908	2,895.47	2.79
Conway	28,710	34,146	....	532,004	712,266	13,375.38	1.88
Eaton	1,838	1,500	1,400	98,458	133,564	4,067.79	3.04
Effingham	2,100	6,250	6,650	168,928	224,055	8,295.91	3.70
Freedom	18,945	9,775	1,700	204,680	290,831	5,737.23	1.97
Hart's Location	2,500	....	890	4,550	14,717	298.45	2.03
Jackson	10,096	2,526	1,600	156,566	212,110	4,221.16	1.99
Madison	604	10,966	1,500	103,776	149,042	4,412.16	2.96
Moultonborough	5,600	13,059	....	264,910	350,222	7,855.12	2.24
Ossipee	4,100	12,712	14,112	381,985	504,391	16,653.87	3.30
Sandwich	30,826	8,264	4,288	359,774	509,536	13,095.07	2.57
Tamworth	19,456	8,986	4,400	250,134	354,786	9,647.28	2.72
Tuftonborough	1,500	2,906	5,200	206,580	275,063	5,782.17	2.10
Wakefield	42,000	32,326	22,650	384,326	577,388	9,700.11	1.69
Wolfeborough	31,702	39,750	3,950	840,516	1,115,614	25,157.77	2.26
Totals	$209,403	$203,716	$91,940	$4,399,914	$6,041,196	$143,107.19	

MERRIMACK COUNTY.

Allenstown	$12,200	$38,780	$259,000	$316,239	$673,290	$7,069.17	1.05
Andover	18,680	16,926	16,802	350,184	493,056	5,141.39	1.04
Boscawen	35,725	69,925	99,000	416,542	699,237	9,437.88	1.35
Bow	32,509	8,834	6,300	276,028	381,460	3,509.43	.92
Bradford	49,074	19,710	5,550	300,702	467,930	7,609.51	1.62
Canterbury	25,833	3,454	....	413,257	513,606	4,961.32	.96
Chichester	5,207	7,700	1,250	215,138	300,084	4,153.34	1.38
Concord	717,060	795,048	....	7,040,580	9,900,703	149,599.80	1.51
Danbury	13.892	4,850	3,340	175,830	248,282	2,258.30	.91
Dunbarton	21,378	9,548	1,250	280,525	374,839	4,354.33	1.17
Epsom	7,799	21,786	3,540	254,812	383,389	6,705.41	1.74
Franklin	26,146	202,700	462,366	999,406	1,913,775	32,055.00	1.67
Henniker	35,748	13,455	36,000	457,750	651,064	7,421.87	1.14
Hill	9,196	5,924	4,200	127,818	184,752	2,630.13	1.42
Hooksett	8,395	24,785	109,000	453,132	664,081	5,381.57	.81
Hopkinton	60,890	12,476	4,900	725,966	953,948	9,799.35	1.03
Loudon	18,315	9,810	5,000	446,821	580,235	6,941.20	1.20
Newbury	16,470	3,100	2,000	170,622	239,595	2,907.92	1.21
New London	46,402	19,300	....	253,630	391,580	5,325.97	1.36
Northfield	11,400	18,455	38,000	355,776	487,149	5,654.32	1.16
Pembroke	53,574	56,850	231,050	685,884	1,216,730	12,997.39	1.07
Pittsfield	26,125	55,650	30,500	677,220	926,470	17,425.00	1.88
Salisbury	13,192	4,090	3,778	246,022	322,200	5,348.50	1.66
Sutton	23,156	7,416	4,450	260,826	369,328	4,468.86	1.21
Warner	51,996	21,116	17,200	571,534	786,822	10,372.97	1.32
Webster	30,902	4,100	5,250	223,782	312,985	4,906.07	1.56
Wilmot	6,470	8,100	2,800	197,102	274,063	4,933.13	1.80
Totals	$1,377,734	$1,463,888	$1,352,526	$16,893,128	$24,710,653	$343,369.13	

TABLE No. 1 — *Continued.*

HILLSBOROUGH COUNTY.

TOWNS.	Money on hand, at Interest or on Deposit.	Stock in Trade.	Mills and their Machinery.	Lands and Buildings.	Amount of Inventory.	Amount of Taxes.	Rate per cent.
Amherst	$44,846	$11,614	$7,300	$520,294	$682,254	$7,901.64	1.15
Antrim	56,228	46,600	22,125	299,552	530,468	5,304.68	1.00
Bedford	61,439	12,950	4,400	420,070	599,007	5,391.06	.90
Bennington	13,925	14,490	32,600	131,199	231,651	3,752.93	1.62
Brookline	12,907	11,255	8,445	207,924	276,576	2,212.62	.80
Deering	4,137	2,175	700	162,247	217,171	3,659.33	1.68
Francestown	24,103	8,650	7,000	344,622	483,016	4,878.59	1.01
Goffstown	170,604	31,620	10,100	810,781	1,174,531	7,335.21	.62
Greenfield	4,888	17,745	....	189,116	261,245	4,579.87	1.75
Greenville	18,858	42,750	244,500	254,605	605,551	6,600.49	1.09
Hancock	12,846	3,550	2,100	237,410	329,043	5,051.05	1.53
Hillsborough	40,310	58,586	55,200	611,794	914,518	17,884.30	1.96
Hollis	55,147	13,330	10,500	506,450	697,650	6,976.50	1.00
Hudson	16,694	11,716	2,900	471,042	599,826	6,958.98	1.16
Litchfield	22,862	11,830	800	165,550	241,299	1,251.22	.52
Lyndeborough	2,270	2,760	1,340	227,436	288,390	3,691.23	1.28
Manchester	373,428	2,419,590	5,096,524	12,343,886	21,905,476	373,168.96	1.70

Mason	16,585	8,587	1,400	256,501	324,882	3,102.06	.95
Merrimack	15,802	16,400	10,250	439,980	549,198	3,903.12	.71
Milford	141,618	108,005	120,700	1,010,002	1,596,431	21,556.82	1.35
Mont Vernon	7,500	1,000	940	237,710	286,020	3,148.28	1.10
Nashua	303,578	760,794	2,251,500	5,508,070	9,652,210	157,040.80	1.62
New Boston	58,028	19,610	11,700	411,325	585,039	5,620.00	.96
New Ipswich	3,324	10,800	105,400	386,572	558,716	7,645.86	1.37
Pelham	24,295	29,012	10,250	398,365	534,031	8,128.34	1.52
Peterborough	158,547	82,900	145,700	813,200	1,440,825	18,729.42	1.30
Sharon	....	700	1,800	61,785	74,481	1,009.41	1.36
Temple	14,344	1,200	1,000	145,243	199,968	2,648.49	1.32
Weare	47,170	30,854	15,600	535,620	750,518	6,754.66	.90
Wilton	48,608	46,545	22,250	640,245	895,739	13,436.50	1.50
Windsor	2,815	75	1,000	35,870	45,201	350.66	.78
Totals	$1,777,706	$3,837,693	$8,206,024	$28,784,466	$47,530,931	$719,673.08	

TABLE No. 1 — *Continued.* CHESHIRE COUNTY.

TOWNS.	Money on hand, at Interest or on Deposit.	Stock in Trade.	Mills and their Machinery.	Lands and Buildings.	Amount of Inventory.	Amount of Taxes.	Rate per cent.
Alstead	$39,744	$20,940	$8,650	$376,562	$546,001	$5,023.20	.92
Chesterfield	55,799	13,255	16,295	475,200	653,896	7,866.00	1.20
Dublin	38,716	4,210	750	267,610	363,499	3,453.68	.95
Fitzwilliam	34,749	23,090	11,950	326,760	463,503	4,635.03	1.00
Gilsum	22,525	34,000	26,600	168,338	307,736	3,101.48	1.01
Harrisville	6,341	40,918	47,800	171,185	308,711	5,712.31	1.85
Hinsdale	28,838	132,258	110,300	608,570	982,529	14,770.76	1.50
Jaffrey	53,298	52,530	35,050	455,110	774,544	9,702.80	1.25
Keene	560,110	411,850	....	4,072,772	6,146,922	70,894.98	1.15
Marlborough	39,948	24,864	41,050	390,634	578,052	9,537.78	1.65
Marlow	29,062	10,884	4,500	187,142	337,894	2,131.94	.63
Nelson	5,154	1,700	5,375	109,868	147,888	2,257.35	1.53
Richmond	4,432	9,792	9,700	170,160	236,204	2,858.06	1.21
Rindge	34,855	11,570	....	386,380	513,918	6,064.23	1.18
Roxbury	1,575	....	....	55,917	66,780	641.09	.96
Stoddard	4,124	800	....	152,220	187,746	3,454.62	1.84
Sullivan	16,543	2,155	3,950	111,690	179,360	2,116.88	1.18
Surry	8,158	550	2,050	129,975	166,943	1,419.02	.85
Swanzey	21,725	21,600	41,880	511,510	695,758	8,005.96	1.15
Troy	11,014	26,450	34,100	261,226	375,198	3,751.98	1.00

Walpole	187,014	23,200	224	1,015,678	1,443,638	13,500.00	.94
Westmoreland	56,965	6,510	2,150	377,313	536,363	4,719.99	.88
Winchester	75,337	156,178	82,200	849,126	1,410,465	16,451.00	1.16
Totals	$1,336,026	$1,029,304	$484,574	$11,630,946	$17,423,548	$202,070.14	

SULLIVAN COUNTY.

Acworth	$11,562	$3,050	$3,250	$253,944	$354,211	$6,149.95	1.74
Charlestown	26,185	22,325	4,100	595,690	827,376	8,666.88	1.05
Claremont	130,324	160,270	267,400	1,599,480	2,482,232	34,256.44	1.38
Cornish	24,288	5,100	5,660	389,136	516,076	8,157.68	1.58
Croydon	16,015	2,825	....	140,372	213,251	2,025.88	.95
Goshen	5,800	3,000	....	126,422	179,880	2,992.05	1.66
Grantham	5,575	3,850	....	109,115	156,146	2,765.91	1.77
Langdon	21,100	610	1,100	175,274	245,496	2,548.65	1.04
Lempster	14,081	2,050	2,650	166,136	228,782	3,660.51	1.60
Newport	70,200	99,626	84,500	825,830	1,336,980	21,701.29	1.62
Plainfield	24,464	5,302	....	411,352	558,963	8,160.86	1.46
Springfield	4,700	1,850	....	122,524	172,338	4,486.58	2.60
Sunapee	14,604	9,776	....	199,666	278,566	5,438.54	1.95
Unity	12,233	240	....	207,693	280,257	4,121.93	1.47
Washington	20,746	13,974	17,300	230,754	335,476	5,522.58	1.64
Totals	$401,877	$333,848	$385,960	$5,553,388	$8,166,030	$120,655.73	

TABLE No. 1 — *Continued.*

GRAFTON COUNTY.

TOWNS.	Money on hand, at Interest or on Deposit.	Stock in Trade.	Mills and their Machinery.	Lands and Buildings.	Amount of Inventory.	Amount of Taxes.	Rate per cent.
Alexandria	$22,110	$17,004	$3,730	$152,375	$247,888	$4,025.13	1.62
Ashland	20,750	31,026	53,600	261,895	422,176	4,253.92	1.01
Bath	18,205	15,800	....	430,040	563,506	9,340.51	1.65
Benton	450	100	375	87,972	105,753	3,974.87	3.76
Bethlehem	6,475	32,750	17,900	517,852	666,804	12,535.92	1.88
Bridgewater	2,324	1,450	400	88,301	119,357	2,685.59	2.25
Bristol	29,500	44,550	51,100	381,438	590,124	11,430.70	1.94
Campton	5,224	18,426	9,750	236,421	355,114	7,119.82	2.00
Canaan	16,220	19,650	8,825	384,045	510,559	10,103.75	1.98
Dorchester	150	700	....	87,240	111,330	4,029.71	3.62
Ellsworth	290	1,500	1,700	21,360	37,336	1,759.68	4.71
Enfield	30,225	29,100	18,700	433,535	630,951	7,020.80	1.11
Franconia	16,800	5,000	1,400	291,575	361,335	5,841.28	1.62
Grafton	27,884	16,018	7,850	215,864	330,020	4,365.97	1.32
Groton	1,620	3,650	6,250	92,208	139,760	3,691.77	2.65
Hanover	115,780	36,004	....	739,352	1,049,066	6,520.92	.62
Haverhill	108,640	47,700	5,700	822,198	1,117,880	13,096.61	1.11
Hebron	2,250	1,590	....	75,462	101,922	1,824.53	1.79

Holderness	6,194	7,368	2,850	170,840	236,042	6,786.08	2.87
Landaff	11,278	3,136	....	162,180	224,950	3,173.16	1.42
Lebanon	232,240	145,716	....	1,441,430	2,094,516	24,672.77	1.17
Lincoln	....	....	....	27,205	31,996	565.00	1.77
Lisbon	95,680	57,010	16,700	662,787	978,454	10,721.48	1.10
Littleton	73,917	87,210	....	1,075,599	1,482,213	22,765.00	1.54
Lyman	6,558	1,000	3,668	138,370	192,788	2,727.88	1.41
Lyme	32,195	15,300	3,800	367,834	504,158	5,493.38	1.09
Monroe	26,416	39,300	14,650	178,166	308,424	2,485.15	.71
Orange	1,400	300	550	56,510	77,518	1,834.75	2.37
Orford	26,580	24,400	3,700	335,440	469,389	6,162.32	1.31
Piermont	39,900	7,950	5,800	256,180	371,596	6,406.27	1.72
Plymouth	1,900	66,130	3,500	530,952	731,796	12,835.30	1.77
Rumney	9,930	11,925	6,050	246,996	344,600	4,307.50	1.25
Thornton	50	13,872	1,450	126,047	185,939	6,305.26	3.39
Warren	13,603	18,499	10,350	169,036	263,311	3,055.99	1.16
Waterville	550	800	1,000	25,938	30,841	562.57	1.82
Wentworth	740	9,126	4,150	166,662	227,748	5,695.15	2.50
Woodstock	2,250	3,144	2,550	68,302	99,716	2,809.64	2.82
Easton	3,725	9,095	....	75,640	110,400	2,086.56	1.89
Livermore	....	4,700	....	43,300	52,560	728.28	1.38
Totals	$1,010,003	$847,999	$268,048	$11,644,547	$16,479,836	$245,800.97	

TABLE No. 1 — *Continued.* COOS COUNTY.

TOWNS.	Money on hand, at Interest or on Deposit.	Stock in Trade.	Mills and their Machinery.	Lands and Buildings.	Amount of Inventory.	Amount of Taxes.	Rate per cent.
Berlin	$9,574	$91,464	$87,000	$308,356	$615,090	$10,764.07	1.75
Carroll	1,150	22,554	12,900	154,470	238,516	4,770.32	2.00
Clarksville	7,464	5,860	800	75,632	115,114	2,076.07	1.80
Colebrook	107,149	56,556	....	442,318	732,630	8,476.94	1.16
Columbia	1,950	20,190	11,100	182,148	270,944	6,271.59	2.31
Dalton	500	8,460	....	116,293	163,995	5,772.41	3.52
Dummer	3,950	7,750	4,000	65,844	109,173	2,966.90	2.72
Errol	1,634	1,150	....	54,224	71,936	2,160.91	3.00
Gorham	15,496	38,850	11,000	303,524	437,916	8,632.69	1.97
Jefferson	....	14,964	....	202,794	299,352	5,700.00	1.90
Lancaster	97,742	72,730	12,250	832,424	1,173,888	22,300.00	1.90
Milan	13,200	19,904	7,100	135,645	229,722	5,875.64	2.56
Northumberland	11,680	17,790	14,200	276,040	394,335	6,642.22	1.68
Pittsburg	3,806	65,516	....	252,395	370,312	5,259.24	1.42
Randolph	....	1,500	1,500	59,142	76,078	2,567.97	3.38
Shelburne	3,452	2,150	1,050	90,950	119,392	2,708.65	2.31
Stark	9,084	25,200	17,950	149,274	249,094	4,835.78	1.94
Stewartstown	45,819	17,410	8,750	224,225	376,520	5,583.19	1.48
Stratford	21,152	25,259	4,800	237,414	376,972	4,695.58	1.14
Wentworth's Loc'n*	....	....	....	....	....	....	....
Whitefield	12,325	87,410	17,800	356,348	478,365	11,122.63	2.33
Totals	$367,127	$602,667	$212,200	$4,519,460	$6,899,344	$129,182.80	

* No inventory returned.

SUMMARY.

COUNTIES.	Money on hand, at Interest, or on Deposit.	Stock in Trade.	Mills and their Machinery.	Lands and Buildings.	Amount of Inventory.	Amount of Taxes.
Rockingham	$1,006,026	$1,102,834	$561,285	$16,725,451	$23,264,407	$331,313.36
Strafford	909,352	1,945,437	2,331,978	11,746,008	19,592,775	271,770.94
Belknap	246,799	354,981	344,279	5,557,289	7,764,806	137,233.42
Carroll	209,403	203,716	91,940	4,399,914	6,041,196	143,107.19
Merrimack	1,377,734	1,463,888	1,352,526	16,893,128	24,710,653	343,369.13
Hillsborough	1,777,706	3,837,693	8,206,024	28,784,466	47,530,931	719,673.08
Cheshire	1,336,026	1,029,304	484,574	11,630,946	17,423,548	202,070.14
Sullivan	401,877	333,848	385,960	5,553,388	8,166,030	120,655.73
Grafton	1,010,003	847,999	268,048	11,644,547	16,479,836	245,800.97
Coös	367,127	602,667	212,200	4,519,460	6,899,344	129,182.80
Totals	$8,642,053	$11,722,367	$14,238,814	$117,454,597	$177,873,526	$2,644,176.76
Deposits in savings banks (less amount invested in real estate)					50,361,325	Tax, 503,613.25
Amount of property taxed and taxes assessed					$228,234,851	$3,147,790.01

Average rate per cent, including savings banks, $1.38.

TABLE No. 2.

EQUALIZATION AND APPORTIONMENT.

Amounts added to and deducted from the inventories of the several towns to make the equalized valuation upon which the apportionment is made, and the sum to be paid by each town on each $1,000 of the state tax.

ROCKINGHAM COUNTY.

TOWNS.	Insurance Stock.	Deposits in Savings Banks.	Railroad Stock, Right of Way, and Buildings.	Increase by Board.	Decrease by Board.	Equalized Valuation.	Proportion to each $1,000 of State Tax.
Atkinson	....	$9,652	$12,748	$7,000	....	$333,370	$1.38
Auburn	....	85,321	1,850	....	....	359,505	1.49
Brentwood	$500	51,226	12,390	....	....	371,632	1.54
Candia	500	222,662	5,902	....	....	590,056	2.44
Chester	....	124,200	15,560	40,000	....	571,820	2.36
Danville	....	33,818	4,600	5,000	....	243,634	1.01
Deerfield	5,000	168,459	38,600	....	....	725,535	3.00
Derry	1,000	245,940	30,891	45,000	....	1,145,531	4.74
East Kingston	1,000	5,113	14,900	....	....	259,011	1.07
Epping	2,350	116,967	38,137	....	....	835,632	3.45
Exeter	6,000	276,555	235,621	....	....	3,197,884	13.22
Fremont	....	26,644	14,596	....	....	290,345	1.20
Greenland	2,000	83,855	24,309	60,000	....	539,064	2.23
Hampstead	2,000	82,951	59,201	3,000	....	533,134	2.20

Hampton	5,000	47,311	15,668			734,509	3.04
Hampton Falls	4,000	29,105	21,482	15,000		355,876	1.47
Kensington		29,318	6,450	4,000		309,140	1.28
Kingston		17,859	21,063			411,265	1.70
Londonderry	1,100	241,569	23,302	60,000		902,148	3.73
Newcastle		70,949	1,125		8,000	217,214	.90
Newington		55,498	6,661	10,000		280,235	1.16
Newmarket	1,200	187,428	42,785			1,310,147	5.42
Newton		5,732	12,479		20,000	384,945	1.59
North Hampton		100,331	8,390	50,000		710,268	2.94
Northwood	2,800	171,901	5,650	3,000		678,606	2.81
Nottingham		94,585	100			467,843	1.93
Plaistow		14,048	16,867		7,000	307,675	1.27
Portsmouth	84,400	2,166,663	923,774	200,000		9,728,762	40.23
Raymond		104,589	3,176			450,383	1.86
Rye	1,600	278,949	27,177	85,000		940,584	3.89
Salem	200	47,205	7,811			648,904	2.68
Sandown		22,497	10,751	2,500		215,890	.89
Seabrook		9,293	20,948			309,831	1.28
South Hampton		3,750	200	10,000		242,431	1.00
South Newmarket	3,800	75,773	81,034			534,707	2.21
Stratham	500	82,599	48,933			703,443	2.91
Windham		70,722	17,821			446,878	1.85
Totals				$599,500	$35,000	$31,287,837	$129.37

TABLE No. 2 — *Continued.*

STRAFFORD COUNTY.

TOWNS.	Insurance Stock.	Deposits in Savings Banks.	Railroad Stock, Right of Way, and Buildings.	Increase by Board.	Decrease by Board.	Equalized Valuation.	Proportion to each $1,000 of State Tax.
Barrington	$600	$234,169	$15,852			$743,589	$3.08
Dover	21,300	2,026,508	599,008	$100,000		10,975,556	45.38
Durham		192,225	46,782	35,000		836,845	3.46
Farmington		352,587	23,773			2,032,089	8.40
Lee		115,963	38,458	19,000		506,235	2.09
Madbury		119,678	10,072	7,000		400,487	1.66
Middleton		55,763			$15,000	147,681	.61
Milton	1,000	191,573	4,323			703,506	2.91
New Durham		62,139	2,855			293,110	1.21
Rochester	12,300	885,621	202,909	150,000		4,109,433	16.99
Rollinsford	1,000	326,690	39,245	75,000		1,571,077	6.50
Somersworth	6,050	717,551	34,211	100,000		3,571,252	14.77
Strafford		147,385	610			651,115	2.09
Totals				$486,000	$15,000	$26,541,975	$109.75

BELKNAP COUNTY.

Alton	....	$178,705	$32,762	....	....	$726,187	$3.00
Barnstead	....	171,397	600	....	....	645,603	2.67
Belmont	....	182,033	6,636	$5,000	....	694,079	2.87
Center Harbor	....	84,046	900	5,000	....	314,130	1.30
Gilford	$2,000	416,040	28,346	6,000	....	1,737,174	7.18
Gilmanton	....	144,619	9,150	....	....	676,805	2.80
Laconia	11,900	624,494	86,993	150,000	....	3,047,031	12.60
Meredith	2,500	301,417	21,308	45,000	....	1,026,528	4.24
New Hampton	....	119,460	2,689	....	....	446,484	1.85
Sanbornton	....	218,631	16,540	60,000	....	672,258	2.78
Tilton	3,000	294,345	47,369	....	....	1,037,407	4.29
Totals				$271,000		$11,023,686	$45.58

TABLE No. 2 — *Continued.* CARROLL COUNTY.

TOWNS.	Insurance Stock.	Deposits in Savings Banks.	Railroad Stock, Right of Way, and Buildings.	Increase by Board.	Decrease by Board.	Equalized Valuation.	Proportion to each $1,000 of State Tax.
Albany		$1,914		$2.500		$87,172	$0.36
Bartlett		4,863	$7,700			303,166	1.25
Brookfield		26,032	2,075	5,000		173,449	.72
Chatham		6		2,400		106,314	.44
Conway	$1,000	61,261	43,678	75,000		893,205	3.69
Eaton		12,423		2,800		148,787	.62
Effingham		26,140		3,400		253,595	1.05
Freedom	1,000	57,664				349,495	1.44
Hart's Location		3,388	2,400	7,000		27,505	.11
Jackson		8,650				220,760	.91
Madison		35,164	1,795	1,500		187,501	.78
Moultonborough		64,658		10,000		424,880	1.76
Ossipee	400	107,489	15,540			627,820	2.60
Sandwich		77,733	2,850			590,111	2.44
Tamworth		60,940	1,800	3,000		420,526	1.74
Tuftonborough	200	26,549	50			301,862	1.25
Wakefield	2,700	153,928	39,918			773,934	3.20
Wolfeborough	11,200	159,751	37,920	6,000		1,330,485	5.50
Totals				$118,600		$7,220,567	$29.86

MERRIMACK COUNTY.

Allenstown		$101,701	$26,627	$150,000		$951,618	$3.94
Andover		136,380	41,782			671,218	2.78
Boscawen		135,634	64,927			899,798	3.72
Bow		172,897	15,130			569,487	2.36
Bradford		115,569	28,491			611,990	2.54
Canterbury		161,698	17,604	15,000		707,908	2.93
Chichester		103,847	34,490			438,421	1.81
Concord	$17,100	2,674,054	2,136,326	500,000		15,228,783	62.97
Danbury		83,153	15,191			346,626	1.43
Dunbarton		172,245	45,340	10,000		602,424	2.49
Epsom	1,600	117,942	25,046			527,977	2.18
Franklin	6,000	556,545	426,876			2,903,196	12.01
Henniker		244,810	32,944	3,000		931,818	3.85
Hill		57,891	12,256			254,899	1.05
Hooksett	6,500	171,511	43,515	60,000		945,607	3.91
Hopkinton	1,400	341,155	39,914	60,000		1,396,417	5.77
Loudon		229,298	16,020	5,000		830,553	3.43
Newbury		108,539	5,690			353,824	1.46
New London		97,701	34,660			523,941	2.17
Northfield		111,522	10,630	3,000		612,301	2.53
Pembroke	16,100	287,625	25,589	200,000		1,746,044	7.22
Pittsfield	4,400	311,587	65,285	50,000		1,357,742	5.61
Salisbury		105,513	4,620	3,000		435,333	1.80
Sutton		105,828	11,583			486,739	2.01
Warner	2,900	186,408	67,871			1,044,001	4.32
Webster		121,522	19,810			454,317	1.88
Wilmot		109,387	4,710			388,160	1.60
Totals				$1,059,000		$36,221,142	$149.77

TABLE No. 2— *Continued.*

HILLSBOROUGH COUNTY.

TOWNS.	Insurance Stock.	Deposits in Savings Banks.	Railroad Stock, Right of Way, and Buildings.	Increase by Board.	Decrease by Board.	Equalized Valuation.	Proportion to each $1,000 of State Tax.
Amherst	$3,000	$264,304	$68,891	$13,500	....	$1,032,949	$4.27
Antrim	7,700	232,545	1,260	....	....	771,973	3.19
Bedford	....	221,442	5,220	12,000	....	837,669	3.46
Bennington	500	63,935	4,240	....	....	300,326	1.24
Brookline	....	68,700	3,125	....	....	348,401	1.44
Deering	....	55,185	750	....	....	273,106	1.13
Francestown	7,000	141,137	10,920	....	....	642,073	2.65
Goffstown	2,700	421,269	29,173	....	....	1,627,673	6.73
Greenfield	....	101,503	30,250	81,000	....	473,998	1.96
Greenville	2,500	90,430	3,023	....	....	701,504	2.90
Hancock	1,000	131,730	11,560	....	....	473,333	1.96
Hillsborough	2,300	237,909	11,063	....	....	1,165,790	4.82
Hollis	5,500	182,923	35,960	....	....	922,033	3.81
Hudson	2,700	187,912	53,972	....	....	844,410	3.49
Litchfield	500	114,066	15,640	....	....	371,505	1.54
Lyndeborough	200	51,677	11,920	....	....	352,187	1.46
Manchester	407,150	5,502,430	1,537,678	900,000	....	30,252,734	125.09

Mason	....	47,678	5,847	....	....	378,407	1.56
Merrimack	....	281,683	64,744	....	....	895,625	3.70
Milford	20,400	680,624	124,585	50,000	....	2,472,040	10.22
Mont Vernon	....	95,858	11,210	....	....	393,088	1.63
Nashua	125,500	3,057,163	950,266	....	....	13,785,139	57.00
New Boston	5,500	312,829	5,660	....	$20,000	889,028	3.68
New Ipswich	500	112,356	7,640	....	....	679,212	2.81
Pelham	....	52,329	14,860	24,000	....	625,220	2.59
Peterborough	26,150	491,251	25,465	....	....	1,983,691	8.20
Sharon	....	12,954	....	....	....	87,435	.36
Temple	....	50,350	710	....	....	251,028	1.04
Weare	11,000	304,449	20,039	25,000	....	1,111,006	4.59
Wilton	6,100	306,166	96,760	....	....	1,304,765	5.40
Windsor	....	11,720	....	....	....	56,921	.24
Totals				$1,105,500	$20,000	$66,304,269	$274.16

TABLE No. 2 — *Continued.* CHESHIRE COUNTY.

TOWNS.	Insurance Stock.	Deposits in Savings Banks.	Railroad Stock, Right of Way, and Buildings.	Increase by Board.	Decrease by Board.	Equalized Valuation.	Proportion to each $1,000 of State Tax.
Alstead		$181,398				$727,399	$3.01
Chesterfield		136,926	$320			791,142	3.27
Dublin		130,230				493,729	2.04
Fitzwilliam		200,625	10,760	$5,000		679,888	2.81
Gilsum	$1,000	144,671				453,407	1.88
Harrisville		100,419	1,400			410,530	1.70
Hinsdale	1,500	200,395	5,180	20,000		1,209,604	5.00
Jaffrey	1,000	308,748	11,667			1,095,959	4.53
Keene	50,400	1,918,253	575,975			8,691,550	35.94
Marlborough		251,481	6,660			836,193	3.46
Marlow	500	223,800		6,000		568,194	2.35
Nelson		60,640	330			208,858	.86
Richmond		84,600				320,804	1.33
Rindge		188,673	4,040			706,631	2.92
Roxbury		17,716				84,496	.35
Stoddard		64,532	100			252,378	1.04
Sullivan		90,211				269,571	1.11
Surry		62,699	300			229,942	.95
Swanzey		305,363	20,090	15,000		1,036,211	4.29
Troy		128,580	6,300			510,078	2.11

Walpole		242,948	26,797			1,713,383	7.08
Westmoreland		223,992	7,600	50,000		817,955	3.38
Winchester		215,284	58,960			1,684,709	6.97
Totals				$96,000		$23,792,611	$98.38

SULLIVAN COUNTY.

Acworth		$135,047		$8,000		$497,258	$2.06
Charlestown	$250	281,110	$23,017			1,131,753	4.68
Claremont	2,000	633,514	36,851	50,000		3,204,597	13.25
Cornish		62,613	4,151	20,000		602,840	2.49
Croydon		24,359		9,000		246,610	1.02
Goshen		28,728				208,608	.86
Grantham		26,742	4,600			187,488	.77
Langdon		89,920		19,000		354,416	1.47
Lempster		57,299				286,081	1.18
Newport	8,900	365,740	186,869	4,000		1,902,489	7.87
Plainfield		121,982	4,410			685,355	2.83
Springfield	500	23,364	8,870	3,000		208,072	.86
Sunapee		66,113	3,017	10,000		357,696	1.48
Unity		74,612		5,000		359,869	1.49
Washington	300	72,222				407,998	1.69
Totals				$128,000		$10,641,130	$44.00

TABLE No. 2 — *Continued.*

GRAFTON COUNTY.

TOWNS.	Insurance Stock.	Deposits in Savings Banks.	Railroad Stock, Right of Way, and Buildings.	Increase by Board.	Decrease by Board.	Equalized Valuation.	Proportion to each $1,000 of State Tax.
Alexandria	....	$45,322	$2,950	....	....	$296,160	$1.22
Ashland	$400	102,855	4,449	$27,000	....	556,880	2.30
Bath	....	17,653	9,157	....	....	590,316	2.44
Benton	....	1,372	1,385	....	....	108,510	.45
Bethlehem	....	61,458	4,607	27,000	....	759,867	3.14
Bridgewater	....	26,728	5,740	....	....	151,825	.63
Bristol	....	297,069	22,939	10,000	....	920,132	3.81
Campton	....	53,321	6,870	....	....	415,305	1.72
Canaan	100	113,306	53,619	5,000	....	682,584	2.82
Dorchester	....	12,732	1,870	....	....	125,932	.52
Ellsworth	....	3,827	....	....	....	41,208	.17
Enfield	....	183,694	251,422	....	....	1,066,067	4.41
Franconia	....	28,128	100	....	....	389,563	1.61
Grafton	....	108,324	17,078	14,000	....	469,422	1.94
Groton	....	30,242	2,270	....	....	172,272	.71
Hanover	....	295,896	80,170	10,000	....	1,435,132	5.93
Haverhill	250	62,395	34,683	....	....	1,215,208	5.03
Hebron	....	30,762	400	....	....	133,084	.55

Holderness		37,608	3,650			277,301	1.15
Landaff		50,488	1,119			276,557	1.14
Lebanon		492,858	195,443		$130,000	2,652,817	10.97
Lincoln		8,456				40,452	.17
Lisbon		102,061	7,488			1,088,003	4.50
Littleton	1,000	289,669	38,747	20,000		1,831,629	7.57
Lyman		24,181	300	5,000		222,269	.92
Lyme		155,418	400			659,976	2.73
Monroe		4,087	50			312,561	1.29
Orange		6,611	981			85,110	.35
Orford		29,017	1,850	20,000		520,256	2.15
Piermont		21,508		15,000		408,104	1.69
Plymouth	5,200	159.342	104,725	50,000		1,051,063	4.35
Rumney		65,259	16,084	20,000		445,943	1.84
Thornton		12,438	400			198,777	.82
Warren		114,532	12,539	10,000		400,382	1.66
Waterville						30,841	.13
Wentworth		33,085	17,857	8,000		286,690	1.19
Woodstock		4,932				104,648	.43
Easton		15,573				125,973	.52
Livermore		6				52,566	.22
Totals				$241,000	$130,000	$20,601,385	$85.19

TABLE No. 2 — *Continued.*

COOS COUNTY.

TOWNS.	Insurance Stock.	Deposits in Savings Banks.	Railroad Stock, Right of Way, and Buildings.	Increase by Board.	Decrease by Board.	Equalized Valuation.	Proportion to each $1,000 of State Tax.
Berlin		$147	$1,332	$30,750		$647,319	$2.68
Carroll		26,082	2,500			267,098	1.10
Clarksville		6				115,120	.48
Colebrook	$100	9,003	300	14,600		756,633	3.13
Columbia		2,572		5,000		278,516	1.15
Dalton		14,364	2,400			180,759	.75
Dummer		171	491			109,835	.45
Errol		1,270				73,206	.30
Gorham	200	51,182	18,173			507,471	2.10
Jefferson		7,598				306,950	1.27
Lancaster	2,800	177,506	11,872			1,366,066	5.65
Milan		3,425	2,045	20,000		255,192	1.06
Northumberland		24,569	19,910	20,000		458,814	1.90
Pittsburg		1,339		5,000		376,651	1.56
Randolph		2,004				78,082	.32
Shelburne		10,630	6,004			136,026	.56
Stark		16,010	4,147			269,251	1.11
Stewartstown		4,862			$10,000	371,382	1.54

Stratford	31,913	10,367	18,000		437,252	1.81
Wentworth's Loc'n					22,000	.09
Whitefield	80,692	1,085	125,000		685,142	2.83
Total valuation of unincorporated places					510,250	2.10
Totals			$238,350	$10,000	$8,209,015	$33.94

Unincorporated Places in Coös County.	Valuation.	Proportion to each $1,000 of State Tax.
Bean's Grant	$5,000	$0.02
Bean's Purchase	30,000	.12
Cambridge	35,000	.15
Chandler's Purchase	1,750	.01
Crawford's Purchase	30,000	.12
Dixville	20,000	.08
Dix's Grant	10,000	.04
Erving's Grant	5,000	.02
Green's Grant	55,000	.24
Gilmanton and Atkinson Academy Grant	30,000	.12
Kilkenny	35,000	.15
Low & Burbank's Grant	20,000	.08
Martin's Location	5,000	.02
Millsfield	30,000	.12
Nash & Sawyer's Location	15,000	.06
Odell	50,000	.21
Pinkham's Grant	5,000	.02
Sargent's Purchase	30,000	.12
Second College Grant	15,000	.06
Success	16,000	.07
Thompson & Meserve's Purchase	30,000	.12
Crawford's Grant	30,000	.12
Cutt's Grant	7,500	.03
Totals	$510,250	$2.10

SUMMARY.

COUNTIES.	Added by Board.	Deducted by Board.	Equalized Valuation.	Apportionment.
Rockingham	$599,500	$35,000	$31,287,837	$129.37
Strafford	486,000	15,000	26,541,975	109.75
Belknap	271,000		11,023,686	45.58
Carroll	118,600		7,220,567	29.86
Merrimack	1,059,000		36,221,142	149.77
Hillsborough	1,105,500	20,000	66,304,269	274.16
Cheshire	96,000		23,792,611	98.38
Sullivan	128,000		10,641,130	44.00
Grafton	241,000	130,000	20,601,385	85.19
Coös	238,350	10,000	8,209,015	33.94
Totals	$4,342,950	$210,000	$241,843,617	$1,000.00

TABLE No. 3.

Number, Value, and Average per Head of Horses, Cattle, and Sheep, in each Town, in April, 1887.

ROCKINGHAM COUNTY.

TOWNS.	Horses.		Average per head.	Oxen.		Average per head.	Cows.		Average per head.	Other Cattle.		Average per head.	Sheep.		Average per head.
	No.	Value.		No.	Value.		No.	Value.		No.	Value.		No.	Value.	
Atkinson..........	120	$8,230	$68.58	16	$890	$55.62	420	$11,730	$27.93	25	$500	$20.00	4	$15	$3.75
Auburn..........	163	10,250	62.88	28	1,460	52.14	302	7,938	26.26	51	874	17.18	90	258	2.87
Brentwood........	160	11,885	74.28	78	3,855	49.42	326	7,645	23.45	123	2,329	18.93	269	716	2.66
Candia............	227	13,768	60.65	80	3,505	43.81	422	9,516	22.55	126	2,113	16.77	90	289	3.21
Chester...........	209	11,108	53.15	59	2,597	44.02	368	8,983	24.41	149	2,659	17.85	180	568	3.16
Danville...........	107	7,530	70.37	20	1,102	55.10	154	4,249	27.59	35	727	20.77	14	50	3.57
Deerfield..........	347	18,620	53.67	175	9,382	53.61	601	13,808	22.98	539	12,076	22.40	774	2,306	2.98
Derry.............	445	26,464	59.47	63	3,344	53.08	855	21,148	24.73	203	3,602	17.74	68	236	3.47
East Kingston.....	119	7,590	64.03	37	2,004	54.16	166	4,880	29.40	40	614	15.35	80	228	2.85
Epping............	260	18,015	69.29	90	5,865	65.16	337	9,623	28.55	172	2,892	16.81	312	1,117	3.58
Exeter...........	445	33,538	75.37	48	3,078	64.12	356	8,967	25.18	76	1,732	22.79	138	571	4.14
Fremont..........	114	8,740	76.67	50	2,320	46.40	155	4,047	26.11	75	1,535	20.47	115	349	3.03
Greenland.........	159	8,260	51.95	44	2,395	54.43	475	12,554	26.43	95	1,097	11.55	69	209	3.03
Hampstead........	188	9,250	49.20	36	1,785	49.58	274	6,608	24.09	12	201	16.75	15	45	3.00
Hampton..........	254	17,585	69.25	67	3,570	53.28	472	10,600	22.46	116	2,340	20.17	103	523	5.08

Hampton Falls.....	139	$10,050	72.30	50	2,750	55.00	493	12,471	25.30	103	1,846	17.92	116	494	4.26
Kensington........	143	8,380	58.60	88	5,124	58.23	411	9,214	22.42	96	2,021	21.05	279	934	3.35
Kingston..........	220	12,535	56.98	51	2,110	41.37	292	6,320	21.64	40	573	14.32	85	216	2.54
Londonderry	316	23,225	73.48	26	1,310	50.38	783	23,653	30.21	108	1,930	17.87	100	307	3.07
Newcastle.........	47	4,672	99.40	....	....	......	34	1,280	37.65	....	....	......	.....	....	....
Newington	109	6,185	56.74	28	1,310	46.79	285	6,496	22.80	48	616	12.83	77	193	2.51
Newmarket.........	217	13,176	60.72	60	2,504	41.73	345	7,640	22.14	89	1,392	15.64	113	296	2.62
Newton	184	14,020	76.20	20	1,065	53.25	193	5,459	28.24	27	463	17.15	47	266	5.66
North Hampton....	265	15,577	58.78	48	2,300	47.92	671	18,735	27.92	83	1,220	14.70	42	143	3.40
Northwood........	319	17,555	55.03	122	6,138	50.31	310	7,779	25.09	140	2,362	16.87	186	595	3.20
Nottingham........	260	11,169	42.96	96	4,402	45.85	381	9,187	24.11	252	3,925	15.58	214	759	3.55
Plaistow..........	164	11,762	71.72	8	332	41.50	272	7,344	27.00	18	268	14.89	.....	...	.....
Portsmouth........	698	66,192	94.83	48	3,165	65.94	564	19,791	35.09	54	820	15.19	44	177	4.02
Raymond.....	206	15,206	73.82	63	3,832	60.83	282	7,448	26.41	214	5,144	24.04	294	998	3.39
Rye	294	17,132	58.28	36	1,552	43.11	546	14,457	26.48	67	938	14.00	47	166	3.53
Salem.............	318	21,104	66.36	26	2,410	92.68	632	16,858	26.67	103	1,808	17.55	84	296	3.52
Sandown...........	101	4,250	42.08	86	3,925	45.64	143	3,089	21.60	70	1,176	16.80	49	139	2.84
Seabrook..........	156	6,380	40.90	34	1,690	49.71	167	3,386	20.28	22	271	12.32	14	45	3.21
South Hampton....	98	5,905	60.26	34	1,835	53.97	143	3,871	27.07	47	808	17.19	86	297	3.45
South Newmarket..	97	7,254	74.78	26	1,776	68.31	142	4,256	29.97	19	356	13.47	86	234	2.72
Stratham	225	17,171	76.32	70	4,330	61.89	479	12,973	27.08	93	1,594	17.14	210	534	2.54
Windham..........	195	12,252	62.83	20	1,058	52.90	510	13,932	27.32	79	1,375	17.41	110	338	3.07
Totals	8,088	$531,985	$65.77	1,931	$102,070	$52.86	13,761	$357,935	$26.01	3,609	$66,197	$18.34	4,604	$14,907	$3.24

TABLE No. 3 — *Continued.*

STRAFFORD COUNTY.

TOWNS.	Horses.		Average per head.	Oxen.		Average per head.	Cows.		Average per head.	Other Cattle.		Average per head.	Sheep.		Average per head.
	No.	Value.		No.	Value.		No.	Value.		No.	Value.		No.	Value.	
Barrington........	334	$18,687	$55.95	153	$7,462	$48.77	573	$15,120	$26.39	363	$8,464	$23.32	186	$765	$4.11
Dover..........	914	85,201	93.22	83	5,330	64.22	749	23,826	31.81	175	3,915	22.37	160	636	3.97
Durham..........	202	14,322	70.90	102	4,776	46.82	413	11,644	28.19	155	2,662	17.17	306	1,100	3.59
Farmington........	444	35,215	79.31	221	9,824	44.45	591	15,111	25.57	164	3,098	18.89	310	934	3.01
Lee	188	13,714	72.94	89	5,238	58.85	452	14,342	31.73	107	2,254	21.06	378	1,378	3.65
Madbury..........	114	8,275	72.59	72	4,145	57.57	272	7,058	25.95	112	2,093	18.69	190	539	2.84
Middleton.........	54	3,045	56.39	52	2,265	43.56	84	1,677	19.96	69	1,587	23.00	91	223	2.45
Milton.......... ..	239	16,222	67.87	113	6,060	53.63	329	8,387	25.80	114	2,614	22.93	304	826	2.72
New Durham......	142	8,355	58.13	83	5,265	64.21	261	6,833	26.18	135	2,846	21.08	126	394	3.13
Rochester.........	753	51,976	69.03	147	8,149	55.44	962	26,268	27.31	258	5,357	20.76	350	1,184	3.38
Rollinsford........	163	13,735	84.26	14	935	65.36	379	11,533	30.43	17	425	25.00	44	132	3.00
Somersworth	351	31,672	90.23	13	710	54.62	239	7,347	30.74	5	90	18.00	27	133	4.93
Strafford..........	298	13,788	46.27	163	8,840	54.29	548	13,194	24.08	513	12,257	23.89	680	1,754	2.58
Totals.........	4,196	$314,207	$74.88	1,305	$68,999	$52.87	5,852	$162,340	$27.74	2,187	$47,662	$21.79	3,152	$9,998	$3.17

BELKNAP COUNTY.

Alton	314	$18,940	$60.32	245	$12,775	$52.14	394	$9,498	$23.85	489	$9,474	$19.39	461	$1,377	$2.99
Barnstead	315	19,324	61.35	185	9,864	53.32	515	12,925	25.10	411	8,167	19.87	624	1,907	3.06
Belmont	262	14,538	55.49	162	7,736	41.58	447	10,370	23.20	257	4,250	16.54	209	736	3.52
Center Harbor	126	6,754	53.60	86	3,983	46.31	207	4,819	23.28	169	3,078	18.21	217	722	3.38
Gilford	335	19,684	58.76	208	9,931	47.75	657	16,003	24.36	442	7,757	17.55	775	2,407	3.11
Gilmanton	319	18,768	58.83	192	10,320	53.75	447	11,104	24.84	785	16,546	21.08	945	3,016	3.19
Laconia	317	33,104	104.43	104	4,866	46.79	284	9,148	32.21	118	2,156	18.27	113	436	3.86
Meredith	311	21,185	68.12	253	11,225	44.37	599	12,930	21.59	304	6,124	20.15	361	1,151	3.19
New Hampton	215	12,978	60.36	130	6,070	46.70	414	9,852	23.80	268	4,797	17.90	443	1,113	2.51
Sanbornton	244	13,898	56.96	204	9,145	44.83	548	12,763	23.29	386	6,603	17.10	1,114	3,250	2.92
Tilton	244	15,586	63.88	50	2,735	54.70	313	7,628	24.37	107	1,861	17.39	198	690	3.48
Totals	3,002	$194,759	$64.87	1,819	$88,650	$48.73	4,825	$117,040	$24.25	3,736	$70,813	$18.95	5,460	$16,805	$3.08

TABLE No. 3 — *Continued.* CARROLL COUNTY.

TOWNS.	Horses.		Average per head.	Oxen.		Average per head.	Cows.		Average per head.	Other Cattle.		Average per head.	Sheep.		Average per head.
	No.	Value.		No.	Value.		No.	Value.		No.	Value.		No.	Value.	
Albany........ ...	75	$2,398	$31.97	46	$1,516	$32.94	62	$998	$16.10	27	$336	$12.44	1	$4	$4.00
Bartlett......... ..	209	17,050	81.58	58	2,685	46.29	218	5,311	24.36	34	512	15.06	146	442	3.03
Brookfield........	90	4,872	54.13	90	4,000	44.44	157	3,556	22.65	107	2,008	18.77	157	464	2.96
Chatham	72	4,690	65.14	125	4,610	36.88	191	3,183	16.66	139	2,250	16.19	223	473	2.12
Conway..........	458	27,090	59.15	195	7,132	36.58	527	10,230	19.41	245	3,350	13.67	207	472	2.28
Eaton.	104	5,062	48.67	140	5,428	38.77	186	3,530	18.98	119	1,898	15.87	166	350	2.11
Effingham.........	183	9,090	49.67	100	3,995	39.95	244	4,599	18.85	143	2,623	18.34	121	220	1.82
Freedom..........	165	11,475	69.55	162	7,193	44.40	278	6,334	22.78	200	4,050	20.25	249	615	2.47
Hart's Location....	62	1,902	30.68	4	75	18.75	10	100	10.00	...	...	...	...	...	...
Jackson..........	128	10,416	81.37	88	4,980	56.59	259	5,446	21.03	143	2,944	20.59	421	1,230	2.92
Madison	133	7,124	53.56	78	3,498	45.37	190	3,428	18.04	115	1,982	17.23	223	436	1.96
Moultonborough....	219	12,362	56.45	128	5,598	43.73	323	7,239	22.41	510	9,084	17.81	415	1,079	2.60
Ossipee...........	339	18,876	55.68	204	11,586	56.79	464	10,014	21.58	244	4,696	19.25	349	930	2.66
Sandwich..........	320	22,224	69.45	333	16,564	49.74	521	12,528	24.05	544	11,864	21.81	841	2,612	3.11
Tamworth.........	262	13,806	52.69	273	11,502	42.50	360	7,694	21.37	204	2,894	14.19	434	1,204	2.77
Tuftonborough.....	161	9,386	58.30	98	5,090	51.94	368	8,678	23.58	400	10,346	25.86	234	676	2.89
Wakefield	223	15,334	68.76	218	11,314	51.90	360	9,376	26.04	196	4,108	20.96	284	826	2.91
Wolfeborough......	427	22,420	52.51	212	9,983	47.08	672	13,175	19.61	562	12,010	21.37	301	1,012	3.36
Totals........	3,630	$215,577	$59.39	2,552	$106,749	$41.83	5,390	$115,419	$21.41	3,932	$76,955	$19.57	4,772	$13,045	$2.73

MERRIMACK COUNTY.

Allenstown	96	$7,682	$80.02	51	$2,316	$45.41	115	$2,897	$25.19	79	$1,574	$19.92	61	$204	$3.34
Andover	235	14,636	62.28	144	7,594	52.74	427	11,118	26.04	252	4,854	19.26	872	2,382	2.73
Boscawen	273	17,040	62.42	66	3,940	59.70	288	7,863	27.30	85	1,308	15.39	481	1,070	2.22
Bow	170	10,975	64.56	72	3,883	53.93	421	10,656	25.31	218	3,951	18.12	144	417	3.52
Bradford	212	15,368	72.49	130	7,114	54.72	353	10,036	28.43	345	7,164	20.77	876	2,474	2.80
Canterbury	253	15,543	61.43	162	8,250	50.92	566	12,807	22.63	392	6,813	17.38	671	1,725	2.57
Chichester	172	13,175	70.78	106	6,661	62.84	449	11,930	26.57	296	5,682	19.20	351	1,021	2.91
Concord	1,253	101,627	81.11	149	8,870	59.53	1,197	29,524	24.66	214	3,733	17.44	474	1,061	2.24
Danbury	156	9,766	62.60	172	8,640	50.23	265	5,800	21.96	263	5,116	19.45	1,073	2,492	2.32
Dunbarton	190	12,738	67.04	123	7,476	60.78	470	12,058	25.64	345	6,598	19.10	206	488	2.37
Epsom	217	14,685	67.67	162	9,383	57.92	514	12,412	24.15	240	4,387	18.25	574	1,826	3.18
Franklin	500	38,449	76.89	90	4,306	47.84	500	12,791	25.58	154	3,445	22.37	633	1,350	2.13
Henniker	319	17,891	56.08	173	9,389	54.27	728	18,860	25.91	388	7,925	20.43	499	1,218	2.44
Hill	132	9,631	72.96	48	2,454	51.12	161	3,724	23.08	133	2,224	16.72	705	1,819	2.58
Hooksett	234	15,323	65.47	36	1,945	54.03	380	9,695	25.25	77	1,328	17.25	29	101	3.48
Hopkinton	388	25,074	64.62	182	9,656	53.05	861	22,746	26.42	286	5,012	17.52	619	1,286	2.07
Loudon	321	20,653	64.34	262	14,291	54.16	545	12,445	22.83	622	11,587	18.63	1,058	2,675	2.53
Newbury	127	8,573	67.50	125	7,506	60.05	201	5,001	24.88	205	4,038	19.70	820	2,213	2.70
New London	209	16,505	78.49	144	7,205	50.03	320	8,510	26.59	236	5,015	21.25	771	2,076	2.69
Northfield	199	10,801	54.28	79	3,773	47.76	343	8,127	23.69	212	3,244	15.30	289	685	2.37
Pembroke	333	22,313	67.01	76	4,230	55.66	524	14,077	26.86	150	2,374	15.83	111	402	3.62
Pittsfield	418	31,290	75.10	133	7,600	57.82	451	12,640	28.33	205	4,220	20.59	313	1,180	3.77
Salisbury	194	11,841	60.01	134	5,878	43.86	340	7,905	23.25	272	4,815	17.70	2,056	3,847	1.87
Sutton	180	10,259	56.99	162	7,837	48.37	294	7,289	24.79	485	9,190	18.95	1,203	3,448	2.87
Warner	335	22,639	67.58	192	11,258	58.64	525	13,464	25.64	391	8,565	21.91	1,415	3,491	2.47
Webster	151	10,157	67.26	90	5,331	59.23	275	6,674	24.27	171	3,536	20.68	1,103	2,733	2.48
Wilmot	169	9,516	56.31	91	5,196	57.10	287	6,926	24.13	332	6,990	21.05	1,576	3,562	2.26
Totals	7,436	$514,150	$69.14	3,354	$181,982	$54.26	11,800	$297,975	$25.25	7,048	$134,688	$19.11	18,983	$47,246	$2.49

TABLE No. 3 — *Continued.*

HILLSBOROUGH COUNTY.

TOWNS.	Horses.		Average per head.	Oxen.		Average per head.	Cows.		Average per head.	Other Cattle.		Average per head.	Sheep.		Average per head.
	No.	Value.		No.	Value.		No.	Value.		No.	Value.		No.	Value.	
Amherst	269	$24,872	$92.46	30	$1,970	$65.67	933	$28,378	$30.42	173	$3,224	$18.64	26	$86	$3.31
Antrim	267	14,945	55.97	120	7,057	58.81	735	19,510	26.54	206	3,503	17.00	324	998	3.08
Bedford	396	29,230	73.81	64	3,705	57.80	990	25,894	26.05	167	2,920	17.49	17	90	5.30
Bennington	81	5,250	64.81	32	1,585	49.37	139	3,330	23.96	46	774	16.83	36	108	3.00
Brookline	144	9,010	62.57	24	1,205	50.21	194	5,100	26.29	27	440	16.30	15	60	4.00
Deering	162	7,563	46.74	111	6,542	58.94	461	11,136	24.16	172	3,026	17.59	305	833	2.73
Francestown	203	15,211	74.93	98	6,155	62.81	530	16,603	30.95	86	1,555	18.08	642	1,356	2.11
Goffstown	451	36,205	80.28	70	4,436	63.37	911	28,152	30.90	263	5,912	22.48	471	1,992	4.23
Greenfield	133	10,774	81.01	68	4,160	61.18	423	11,161	26.39	76	1,349	17.75	213	681	3.20
Greenville	118	11,215	95.04	12	750	62.33	153	4,937	32.27	32	534	16.69	35	168	4.80
Hancock	193	13,496	69.93	85	4,855	57.12	556	17,855	32.11	278	5,508	19.81	245	654	2.67
Hillsborough	391	29,230	74.76	169	9,404	55.64	918	26,311	28.66	362	6,947	19.19	325	954	2.93
Hollis	319	24,730	77.52	34	2,065	60.74	842	25,405	30.27	123	2,143	17.42	40	176	4.40
Hudson	292	21,296	72.93	28	1,794	64.07	657	18,594	29.82	103	2,146	20.83	106	410	3.87
Litchfield	82	5,825	71.03	32	1,710	53.44	199	5,545	27.86	29	595	20.52	32	119	3.72
Lyndeborough	146	9,894	67.77	66	4,022	60.94	614	15,504	25.28	160	2,882	18.01	62	196	3.16
Manchester	1,543	151,842	98.41	22	1,180	53.64	642	15,100	23.52	38	552	14.53	17	34	2.00

Mason..	140	10,417	74.41	24	1,545	64.37	333	10,794	32.41	66	1,239	18.77	40	139	3.50
Merrimack	203	13,965	68.79	46	2,480	53.91	501	13,849	27.64	89	1,675	18.82	75	427	5.70
Milford	403	35,026	86.91	14	900	64.29	830	27,186	32.75	115	2,625	22.83	33	79	2.40
Mont Vernon......	143	9,668	67.61	4	234	58.50	354	9,664	27.30	131	2,418	18.46	27	84	3.11
Nashua............	1,100	88,494	80.45	18	930	51.67	695	16,472	23.70	57	748	13.12	27	58	2.15
New Boston	267	17,676	66.20	140	8,700	62.14	720	18,754	26.05	247	4,509	18.26	220	621	2.82
New Ipswich	199	12,812	64.38	44	2,212	50.27	436	10,800	24.77	39	598	15.10	56	188	3.54
Pelham	259	20,645	79.71	18	1,185	65.83	803	20,781	25.88	113	1,575	13.94	53	155	2.93
Peterborough......	361	30,552	84.63	70	4,778	68.26	561	17,478	31.16	264	5,977	22.64	111	312	2.81
Sharon.......	47	2,715	57.77	16	900	56.25	77	1,833	23.81	19	284	14.95	20	64	3.20
Temple	112	8,008	71.50	56	3,165	56.52	481	12,626	26.25	97	1,755	18.09	55	247	4.49
Weare	335	22,779	68.00	182	10,780	59.23	771	22,399	29.05	347	7,373	21.24	1,830	4,731	2.59
Wilton	303	22,501	74.26	53	3,025	57.08	777	23,630	30.42	104	1,916	18.42	102	362	3.55
Windsor	17	1,148	67.53	16	861	53.81	56	1,398	24.96	16	253	15.81	55	150	2.73
Totals	9,079	$716,994	$78.97	1,766	$104,290	$59.05	17,292	$486,179	$28.12	4,045	$76,955	$19.02	5,615	$16,532	$2.94

TABLE No. 3 — *Continued.* CHESHIRE COUNTY.

TOWNS.	Horses.		Average per head.	Oxen.		Average per head.	Cows.		Average per head.	Other Cattle.		Average per head.	Sheep.		Average per head.
	No.	Value.		No.	Value.		No.	Value.		No.	Value.		No.	Value.	
Alstead	330	$22,752	$68.95	123	$6,971	$56.67	437	$11,739	$26.86	214	$4,090	$19.11	1,486	$3,807	$2.56
Chesterfield	300	21,172	70.57	163	10,200	62.58	506	13,570	26.82	307	7,319	23.84	643	2,066	3.21
Dublin	146	11,975	82.02	60	3,785	63.08	282	8,165	28.95	129	2,500	19.38	200	578	2.89
Fitzwilliam	225	14,785	65.71	64	3,593	56.14	346	10,090	29.16	108	1,999	18.51	126	367	2.91
Gilsum	137	11,894	86.82	65	4,207	64.72	123	3,794	30.85	90	2,041	22.68	329	812	2.47
Harrisville	123	8,890	72.28	54	3,279	60.72	260	7,235	27.83	96	2,155	22.45	430	1,188	2.76
Hinsdale	292	23,365	80.02	49	3,075	62.76	458	12,307	26.87	137	3,126	22.82	278	699	2.41
Jaffrey	292	24,010	82.23	123	7,608	61.85	576	16,440	28.47	221	4,078	18.45	249	904	3.63
Keene	823	73,168	88.90	63	4,323	68.62	849	25,923	30.53	275	5,871	21.35	349	1,025	2.94
Marlborough	228	16,038	70.34	71	4,586	64.59	315	8,814	27.98	81	1,814	22.40	212	708	3.34
Marlow	161	12,626	78.42	113	6,776	59.96	239	6,670	27.91	143	2,991	20.92	1,217	4,213	3.46
Nelson	90	7,182	79.80	45	2,666	59.24	155	4,111	26.52	55	1,012	18.40	606	1,762	2.91
Richmond	141	9,985	70.82	84	4,907	58.42	227	6,532	28.78	108	2,096	19.41	164	497	3.03
Rindge	248	20,805	83.89	71	4,555	64.15	444	13,280	29.91	131	2,793	21.32	171	671	3.92
Roxbury	33	1,596	48.37	25	1,576	63.04	76	1,798	23.66	21	324	14.95	201	534	2.66
Stoddard	89	5,142	57.78	60	3,078	51.30	193	5,108	26.47	95	1,906	20.06	444	1,354	3.05
Sullivan	94	6,920	73.66	62	4,005	64.60	181	4,696	25.94	86	2,089	24.29	590	1,432	2.43
Surry	111	8,675	78.15	33	2,130	64.55	157	4,145	26.40	137	2,459	17.95	610	1,649	2.70
Swanzey	329	22,960	69.79	60	3,020	50.34	567	14,173	25.00	193	3,007	15.58	590	1,690	2.86
Troy	124	9,022	72.76	40	2,389	59.72	206	5,409	26.28	94	1,758	18.71	33	120	3.64

Walpole	508	40,548	79.80	118	6,952	58.92	725	23,054	31.80	401	9,372	23.37	10,824	32,758	3.03
Westmoreland.....	320	24,734	77.29	94	5,423	57.70	541	15,557	28.76	521	12,194	23.41	955	2,690	2.91
Winchester	393	28,826	73.35	144	10,197	70.81	659	14,945	22.68	279	5,883	21.09	372	1,303	3.50
Totals...... ..	5,537	$427,070	$77.13	1,784	$109,301	$61.27	8,522	$237,555	$27.88	3,922	$82,877	$21.13	21,079	$62,827	$2.98

SULLIVAN COUNTY.

Acworth	291	$19,482	$66.95	124	$7,088	$57.16	394	$10,197	$25.88	298	$6,723	$22.56	2,772	$7,264	$2.62
Charlestown... ...	373	25,785	69.13	54	2,695	49.91	603	14,275	23.67	353	7,262	20.57	5,432	15,822	2.91
Claremont	629	53,610	85.23	110	6,592	59.93	1,038	27,686	26.67	556	10,962	19.72	3,192	7,856	2.46
Cornish	385	20,662	53.66	184	9,960	54.13	506	12,144	24.00	377	6,370	16.90	4,244	7,922	1.87
Croydon.....	198	9,146	46.19	143	5,102	35.68	304	5,643	18.56	174	2,523	14.50	1,129	2,287	2.03
Goshen............	134	8,746	65.27	76	3,988	52.37	247	6,324	25.60	214	4,968	23.21	395	1,110	2.81
Grantham	103	7,380	71.65	94	4,690	49.89	173	3,773	21.81	114	2,265	19.87	951	2,328	2.45
Langdon	156	11,768	75.41	44	2,710	61.59	250	6,370	25.48	166	3,976	23.95	1,022	2,660	2.60
Lempster..........	169	11,363	67.24	86	4,652	54.09	279	6,780	24.30	184	4,534	24.64	360	991	2.75
Newport...........	525	38,618	73.56	180	8,012	44.51	798	18,806	23.57	426	6,790	15.94	1,348	2,800	2.08
Plainfield..........	384	27,925	72.72	255	13,700	53.73	582	13,635	23.42	429	7,599	17.71	6,864	14,863	2.17
Springfield.........	142	7,008	49.35	157	6,992	44.54	243	5,527	22.74	223	4,224	18.94	1,292	2,514	1.95
Sunapee	148	8,584	58.00	130	6,594	50.72	268	5,992	22.36	101	1,708	16.92	250	606	2.42
Unity	225	12,158	54.04	135	6,549	47.03	395	8,774	22.21	367	7,268	19.56	1,610	3,294	2.05
Washington	177	13,268	74.96	106	5,604	52.87	331	8,540	25.80	155	2,810	18.13	484	1,466	3.03
Totals.........	4,039	$275,503	$68.21	1,878	$94,928	$50.55	6,411	$154,466	$24.09	4,137	$79,982	$19.33	31,345	$73,783	$2.35

TABLE No. 3 — *Continued.*

GRAFTON COUNTY.

TOWNS.	Horses.		Average per head.	Oxen.		Average per head.	Cows.		Average per head.	Other Cattle.		Average per head.	Sheep.		Average per head.
	No.	Value.		No.	Value.		No.	Value.		No.	Value.		No.	Value.	
Alexandria	189	$12,540	$66.35	130	$6,606	$50.81	267	$5,505	$20.62	298	$5,502	$18.46	903	$2,340	$2.59
Ashland	155	12,483	80.54	43	2,370	55.12	211	5,014	23.76	66	1,205	18.26	129	326	2.53
Bath	382	28,195	73.81	137	7,748	56.55	544	12,199	22.42	582	10,149	17.44	3,265	8,753	2.68
Benton	70	3,963	56.61	65	2,810	43.23	110	1,800	16.36	55	879	15.98	125	278	2.22
Bethlehem	440	25,595	58.17	149	6,870	46.11	448	10,910	24.35	296	4,898	16.55	506	1,130	2.23
Bridgewater	98	5,786	59.04	82	3,816	46.54	128	3,014	23.55	138	2,725	19.75	586	1,480	2.53
Bristol	247	17,138	69.38	82	4,156	50.68	291	6,798	23.36	155	2,870	18.52	182	606	3.27
Campton	262	18,484	65.41	182	9,014	49.53	396	9,177	23.12	449	8,158	18.17	965	2,480	2.58
Canaan	247	14,895	60.30	175	8,397	47.98	474	10,515	22.18	317	5,495	17.33	1,897	4,388	2.37
Dorchester	94	4,228	44.98	88	4,198	47.70	171	3,316	19.39	107	1,360	12.71	515	1,032	2.00
Ellsworth	28	1,613	57.61	78	3,245	41.60	55	966	17.67	65	1,081	16.63	200	481	2.40
Enfield	315	20,381	64.70	214	10,485	49.00	541	11,910	22.01	205	5,769	28.14	2,229	4,671	2.07
Franconia	179	13,135	70.03	32	1,665	52.03	220	5,114	23.25	92	1,625	17.66	328	966	2.94
Grafton	199	11,878	59.79	226	10,192	45.10	318	6,622	20.82	263	4,613	18.30	1,226	2,847	2.32
Groton	111	6,778	61.06	80	3,458	43.22	165	3,538	21.44	174	3,044	17.49	620	1,680	2.71
Hanover	388	34,289	88.37	122	6,686	54.80	693	18,234	26.31	483	8,105	16.78	4,833	10,738	2.22
Haverhill	626	43,995	70.28	138	6,648	48.17	1,156	29,281	25.33	666	12,109	18.18	3,172	7,936	2.50
Hebron	77	4,172	54.18	58	2,552	44.00	150	3,196	21.33	143	2,654	18.56	328	1,000	3.05

Holderness	151	10,138	67.14	156	8,868	56.85	295	7,008	23.76	211	4,460	21.14	322	1,010	3.14
Landaff	166	11,600	69.82	138	7,506	54.39	251	5,358	21.35	269	4,516	16.79	1,079	2,448	2.27
Lebanon	593	50,008	84.33	150	8,315	55.43	666	17,334	26.03	475	8,737	18.39	5,589	14,411	2.58
Lincoln	18	1,475	81.84	12	695	57.92	24	461	19.21	12	148	12.33	2	4	2.00
Lisbon	609	50,188	82.41	142	6,876	48.42	818	17,417	21.29	422	6,486	15.37	1,938	5,350	2.76
Littleton	649	46,118	71.06	231	11,247	48.69	932	21,117	22.65	479	8,152	17.02	1,442	4,268	2.96
Lyman	213	10,971	51.51	75	3,256	43.41	391	8,192	20.95	294	4,205	14.30	902	2,494	2.76
Lyme	225	16,755	74.47	72	4,915	68.26	426	11,366	26.68	458	9,748	21.28	5,685	13,820	2.43
Monroe	190	14,020	73.79	37	1,718	46.43	357	8,608	24.11	230	4,318	18.77	625	2,494	3.99
Orange	67	3,225	48.13	68	2,887	42.46	101	2,140	21.19	67	1,169	17.45	510	923	1.81
Orford	275	18,470	67.20	152	8,720	57.37	472	10,652	22.57	375	7,381	19.68	2,857	5,903	2.07
Piermont	254	16,594	65.33	80	4,164	52.05	456	10,652	23.36	260	4,220	16.20	2,587	6,160	2.77
Plymouth	311	19,206	61.76	106	4,822	45.49	388	9,536	24.58	181	3,090	17.10	588	1,456	2.48
Rumney	255	15,988	62.70	144	6,788	47.14	320	6,996	21.86	219	3,664	16.73	482	1,168	2.42
Thornton	165	7,625	46.21	183	7,790	42.57	289	5,270	18.23	277	4,039	14.58	540	1,278	2.36
Warren	206	10,914	52.92	111	5,578	50.25	244	4,332	17.75	155	2,244	14.48	781	1,565	2.00
Waterville	12	710	59.87	17	690	40.59	8	145	18.12	4	55	13.75	1	3	3.00
Wentworth	170	9,056	53.27	140	6,028	43.06	306	5,064	16.51	182	2,598	14.27	452	970	2.15
Woodstock	72	4,630	64.31	97	4,474	46.12	102	2,078	20.37	66	822	12.45	153	470	3.07
Easton	87	5,152	59.22	90	4,236	47.07	108	1,992	18.44	91	1,375	15.11	249	625	2.51
Livermore	41	1,200	29.27	.....	....	......	1	20	20.00	.....	....	......	......	....	.....
Totals	8,836	$603,591	$68.31	4,282	$210,489	$49.16	13,293	$302,847	$22.78	9,281	$163,668	$17.63	48,793	$119,952	$2.46

TABLE No. 3 — *Continued.*

COOS COUNTY.

TOWNS.	Horses.		Average per head.	Oxen.		Average per head.	Cows.		Average per head.	Other Cattle.		Average per head.	Sheep.		Average per head.
	No.	Value.		No.	Value.		No.	Value.		No.	Value.		No.	Value.	
Berlin	203	$13,960	$68.77	44	$1,691	$38.43	180	$4,072	$22.62	60	$806	$13.43	84	$177	$2.10
Carroll	298	16,222	54.44	81	3,170	39.12	180	3,654	20.30	75	1,210	16.13	34	92	2.71
Clarksville	126	6,694	53.13	63	2,302	36.54	203	3,640	17.93	172	2,456	14.28	744	2,048	2.75
Colebrook	591	31,153	52.71	120	5,415	45.12	804	15,981	19.88	724	12,422	17.16	1,600	4,591	2.87
Columbia	339	17,635	52.05	87	3,725	42.82	519	9,131	17.59	452	5,352	11.84	764	2,173	2.84
Dalton	157	8,340	53.12	84	3,638	43.31	260	6,330	24.31	266	4,067	15.14	787	2,367	3.01
Dummer	120	6,324	52.70	63	2,645	41.99	191	3,683	19.27	98	1,378	14.06	424	933	2.20
Errol	76	4,664	61.37	15	950	63.33	66	1,356	20.55	40	638	15.95	281	678	2.41
Gorham	180	13,570	75 39	66	3,260	49.40	176	4,010	22.73	37	500	13.51	122	312	2.56
Jefferson	433	23,434	54.12	163	6,258	38.39	492	10,760	21.87	363	6,584	18.03	548	1,340	2.25
Lancaster	636	40,956	64.36	163	7,196	44.15	1,044	23,482	22.49	680	10,440	15.35	1,355	3,580	2.64
Milan	273	12,251	45.13	121	4,454	36.81	387	7,238	18.70	239	2,646	11.07	682	1,676	2.46
Northumberland	278	18,347	60.90	81	4,021	49.64	328	6,100	18.70	514	9,614	18.70	580	1,674	2.89
Pittsburg	236	13,765	58.33	83	2,667	32.13	325	6,070	18.68	354	5,044	14.24	933	2,729	2.92
Randolph	89	4,564	50.16	49	2,044	41.73	64	1,254	19.59	51	570	11.17	137	364	2.66
Shelburne	99	5,710	57.68	25	810	32.40	170	3,800	22.35	103	1,208	11.73	100	266	2.66
Stark	186	13,225	71.10	76	4,052	53.32	242	4,608	19.04	206	2,748	13.34	512	1,211	2.37
Stewartstown	339	21,273	62.75	153	6,444	42.12	563	11,483	20.40	467	8,499	18.20	1,546	4,133	2.67

Stratford..........	422	32,570	77.18	115	5,340	46.43	348	6,885	19.84	246	3,439	19.49	459	1,211	2.64
Wentworth's Loc'n*	.....	....	.....	.....	....	.....	......	....	......	.....	....	.....	......	....	....
Whitefield.........	361	24,075	66.69	96	4,295	44.74	641	13,100	20.44	432	7,286	16.87	190	491	2.58
Totals	5,442	$328,732	$60.40	1,748	$74,377	$42.55	7,183	$146,637	$20.41	5,579	$86,907	$15.58	10,882	$32,046	$2.71

* No inventory returned.

SUMMARY.

Counties.	Horses.			Oxen.			Cows.			Other Cattle.			Sheep.		
	No.	Value.	Av'ge.	No.	Value.	Av'ge.	No.	Value.	Av'ge.	No.	Value.	Av'ge.	No.	Value.	Av'ge.
Rockingham............	8,088	$531,985	$65.77	1,931	$102,070	$52.86	13,761	$357,935	$26.01	3,609	$66,197	$18.34	4,604	$14,907	$3.24
Strafford	4,196	314,207	74.88	1,305	68,999	52.87	5,852	162,340	27.74	2,187	47,662	21.79	3,152	9,998	3.17
Belknap	3,002	194,759	64.87	1,819	88,650	48.73	4,825	117,040	24.25	3,736	70,813	18.95	5,460	16,805	3.08
Carroll.................	3,630	215,577	59.39	2,552	106,749	41.83	5,390	115,419	21.41	3,932	76,955	19.57	4,772	13,045	2.73
Merrimack.............	7,436	514,150	69.14	3,354	181,982	54.26	11,800	297,975	25.25	7,048	134,688	19.11	18,983	47,246	2.49
Hillsborough..	9,079	716,994	78.97	1,766	104,290	59.05	17,292	486,179	28.12	4,045	76,955	19.02	5,615	16,532	2.94
Cheshire...............	5,537	427,070	77.13	1,784	109,301	61.27	8,522	237,555	27.88	3,922	82,877	21.13	21,079	62,827	2.98
Sullivan................	4,039	275,503	68.21	1,878	94,928	50.55	6,411	154,466	24.09	4,137	79,982	19.33	31,345	73,783	2.35
Grafton	8,836	603,591	68.31	4,282	210,489	49.16	13,293	302,847	22.78	9,281	163,668	17.63	48,793	119,952	2.46
Coös.........	5,442	328,732	60.40	1,748	74,377	42.55	7,183	146,637	20.41	5,579	86,907	15.58	11,882	32,046	2.71
Totals	59,285	$4,122,568	$69.54	22,419	$1,141,835	$50.93	94,329	$2,378,393	$25.21	47,476	$886,704	$18.68	155,685	$407,141	$2.62
Totals for 1886.. ...	56,840	$3,830,814	$67.39	21,457	$1,119,882	$52.19	90,463	$2,297,601	$25.40	45,002	$806,906	$17.93	150,513	$381,732	$2.54

Total value of live stock, 1887, $8,936,641; 1886, $8,436,935.

SIXTH ANNUAL REPORT

RELATING TO THE

REGISTRATION AND RETURN

OF

BIRTHS, MARRIAGES, DIVORCES, AND DEATHS

IN NEW HAMPSHIRE

FOR THE YEAR 1885.

VOLUME III. — NEW SERIES.

MANCHESTER:
JOHN B. CLARKE, PUBLIC PRINTER.
1887.

REGISTRATION REPORT.

To His Excellency the Governor and the Honorable Council:

The sixth annual report relating to the registration and return of births, marriages, divorces, and deaths, for the year ending December 31, 1885, is herewith presented. The same order of arrangement, in respect to tables, has been maintained as in previous reports. Some additional information relative to certain diseases has been added. It is believed that the facts given in relation to marriages are as nearly correct as can be attained under any law. A comparison of the tables on this subject with those published in other States leads to the belief that approximate accuracy has been secured.

The registration of births is not so accurate, for the reason that a large number probably remain unreported, and of those reported a large number lack the name of the child. Some additional legislation is necessary to perfect the registration of births. The report made within six days after the birth seldom contains the name of the child. From a historical or genealogical standpoint, and in legal questions where the identity of the person is concerned, the record of the name of the child, as well as of its parents, date of birth, etc., are essential. On the other hand, unless the physician's return is made within a few days after the event, it is liable to be overlooked or forgotten; consequently no return would be made by him.

Again, there are a large number of births unattended by any physician, which are not reported to the local registrar. To obviate the defects which exist from these causes it is necessary to make some change in the law. There are two ways suggested: First. That a return of every birth which occurs during the calendar year preceding the annual return of the inventory blanks should be entered upon such blanks by the parents, with all the facts which the law calls for. Such an entry could be as easily made as any other fact called for by the inventory blank. As these inventory blanks are not returnable until April, every child would be at least three months old, and nearly all of them would have been named. The assessors or selectmen should then place these returns in the hands of the local registrar for recording, and the return to the state registrar would then be made in May instead of in January. This method might be supplemented by giving the local registrar a reasonable fee for discovering and reporting any births not returned, and for securing and recording the names of those children who were not named when the inventory blank was returned.

Second. The local registrar might be made responsible for the thorough enforcement of the registration law within his jurisdiction, and be required to collect all facts called for by the law, and not otherwise reported to him. This method, however, would probably be attended with greater expense than the other, and would not be as effectual in the aggregate, as its enforcement would depend in a great measure upon the interest manifested by the local registrar and the compensation allowed.

The registration of marriages is as complete as can be secured under any system; in fact, it may be said to be correct, very few marriages remaining unreported.

Under the present system of requiring burial permits, the record of deaths has been brought to a degree of perfection that makes the record, so far as numbers are concerned, very nearly correct. This opinion is based upon the death rate. The difficulty with which it was thought the operation of this law would be attended has been found by experience to have but little foundation, and the accuracy of registration has been greatly improved thereby. In some instances there has been a little misunderstanding as to how and where a permit should be obtained, and under what circumstances it should be considered valid. For the information of those who do not clearly understand its provisions, the following brief statement is made:

1. A permit should be obtained in the town where the person died. The registrar of another town has no right to grant a permit.

2. A permit having been obtained according to law, it should be received by the authorities of any other town without question, and a second permit, except in case of disinterment, should not be required.

3. The return by the undertaker or sexton should always be made to the registrar of the town or city where the death occurred, without regard to the place of burial. Permits properly issued by authorities of other States should be recognized as valid in this State.

Local registrars should consider themselves responsible for the enforcement of the law within their respective towns and cities. They should inform the undertakers of the provisions of the law (copies of which will be furnished by the state registrar), and in all instances should require that permits be obtained before burial. Local registrars are also requested to notify the state registrar of any violations of the law that may come to their knowledge. Local registrars should at all times be provided with blanks for their own, sub-registrars', and physicians' use, which may be obtained from the state registrar upon application.

The attention of physicians is called to the nosological table which this report contains:

TABLE 1.

Showing Births, Marriages, and Deaths for 1880, 1881, 1882, 1883, 1884, and 1885, with Annual Increase in number reported.

COUNTIES.	Population of 1880.	BIRTHS.						MARRIAGES.						DEATHS.					
		1880.	1881.	1882.	1883.	1884.	1885.	1880.	1881.	1882.	1883.	1884.	1885.	1880.	1881.	1882.	1883.	1884.	1885.
Rockingham............	49,064	733	675	749	692	637	640	310	382	419	399	419	447	627	717	732	699	873	911
Strafford	35,558	322	423	625	698	640	621	255	332	428	425	415	388	184	329	372	494	627	619
Belknap................	17,948	215	227	273	261	242	256	108	177	166	198	147	150	147	153	219	262	285	289
Carroll..................	18,224	153	198	274	286	275	245	136	149	159	175	171	182	107	189	219	253	333	269
Merrimack.............	46,300	628	750	809	723	739	734	330	353	364	432	344	361	595	695	726	762	736	796
Hillsborough	75,634	840	879	1,617	1,675	1,843	1,952	752	674	1,025	949	886	815	1,203	1,396	1,390	1,551	1,655	1,701
Cheshire...............	28,734	255	348	445	496	554	511	195	206	232	262	238	233	240	271	405	418	497	494
Sullivan	18,161	245	236	265	269	268	267	134	151	149	167	138	109	190	261	261	254	273	284
Grafton	38,788	584	593	657	647	643	631	274	270	319	339	332	327	429	482	487	547	652	611
Coös	18,580	274	286	410	403	406	462	135	146	172	149	202	168	107	157	190	181	263	227
Totals	346,991	4,249	4,615	6,124	6,150	6,247	6,319	2,629	2,830	3,433	3,495	3,292	3,180	3,829	4,650	5,001	5,421	6,194	6,201
Yearly increase since 1880 in numbers reported...	....	......	366	1,509	26	97	72	......	201	603	62	- 203	- 112	......	821	351	420	773	7
Total increase in numbers reported since 1880....	....	......	......	1,875	1,901	1,998	2,070	......	......	804	866	663	551	......	......	1,172	1,592	2,365	2,372

Table 1 shows the number of births, marriages, and deaths for a period of six years, with the variations in the number annually reported. An examination of this table shows that there has been a constant improvement in the registration since the first report was made in 1880. During the period mentioned there has been a gain of 2,070 births, 551 marriages, and 2,372 deaths. In 1884 and 1885 there was a falling off in the number of marriages reported. In 1884 there were 203 less marriages reported than in 1883, and in 1885 112 less than in the preceding year. This decrease in marriages is believed to be actual, and not a defect in registration. The cause for this decrease may, perhaps, be better explained by those who are studying the subject of social science.

TABLE 2.

Population of 1880; Births, Marriages, and Deaths, with percentage of each to one thousand of the population, for the year ending December 31, 1885, by Counties.

COUNTIES.	Population of 1880.	Births.	Rate per 1,000 of population.	Marriages.	Rate per 1,000 of population.	Deaths.	Rate per 1,000 of population.
Rockingham	49,064	640	13.04	447	9.11	911	18.56
Strafford	35,558	621	17.46	388	10.91	619	17.40
Belknap	17,948	256	14.26	150	8.35	289	16.10
Carroll	18,224	245	13.44	182	9.98	269	14.77
Merrimack	46,300	734	15.85	361	7.79	796	17.19
Hillsborough	75,634	1,952	25.80	815	10.77	1,701	22.48
Cheshire	28,734	511	17.78	233	8.10	494	17.19
Sullivan	18,161	267	14.70	109	6.00	284	15.63
Grafton	38,788	631	16.26	327	8.43	611	15.75
Coös	18,580	462	24.86	168	9.09	227	12.21
Total	346,991	6,319	18.21	3,180	9.16	6,201	17.87

It will be seen by this table that the
Birth rate for the State is 18.21 per 1,000 of the population.
Marriage rate " 9.16 " "
Death rate " 17.87 " "

The birth rate is too low, showing that the registration is incomplete. An examination of corresponding reports for Massachusetts shows a birth rate of 25.12 to 1,000 of the population.
Rhode Island . 24.00 " "
Connecticut . 23.05 " "

The highest rate in this State is returned from those counties which contain a relatively large number of the laboring classes. Hillsborough county, with its great number of factory operatives, reports 25.8 per 1,000; Coös county, which has a large number of laborers engaged in the lumbering business, ranks next, 24.86 per 1,000; and Cheshire and Strafford counties next in order, with 17.78 and 17.46 respectively.

The marriage rate is highest in Hillsborough county, followed by Strafford, Rockingham, Carroll, and Coös in order. The marriage rates for Massachusetts, Rhode Island, and Connecticut are 8.78, 8.40, and 7.89 respectively. It will be seen that our marriage rate, 9.16, is greater than in the States named.

The death-rate column shows that the greatest defect in registration exists in Coös county, where it is given as 12.21 per 1,000. It is believed that the death rate for the State, if correctly reported, would be between 18 and 19 per 1,000. The rather high rate of mortality in Hillsborough county is due largely to the fatality among the lower classes in the manufacturing cities.

TABLE 3.

BIRTHS, MARRIAGES, AND DEATHS FOR THE YEAR ENDING DECEMBER 31, 1885.

ROCKINGHAM COUNTY.

TOWNS.	Population in 1880.	Births.										Marriages.						Deaths.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	Husband Americ'n.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Atkinson	502	2	2	....	4	7.96	3	1	....	....	....	....	...	1	....	1	2	3	2	....	5	5	....	....	9.96
Auburn	719	5	4	....	9	12.51	7	....	....	1	1	7	....	1	....	1	9	2	6	....	8	6	.. .	2	8.34
Brentwood	999	8	4	....	12	12.01	8	3	....	....	1	7	1	....	....	....	8	19	20	....	39*	27	5	7	39.03
Candia	1,340	8	9	....	17	12.68	14	....	....	....	3	14	...	2	....	...	16	14	16	....	30	29	1	....	22.38
Chester	1,136	6	11	....	17	14.96	15	1	1	....	....	8	....	....	1	....	9	7	10	...	17	15	1	1	13.46
Danville	613	1	4	....	5	8.15	4	....	....	1	....	3	....	....	1	3	7	3	7	....	10	3	1	6	16.31
Deerfield	1,569	12	4	....	16	10.19	15	....	....	....	1	11	....	....	....	....	11	17	14	....	31	12	...	19	19.76
Derry	2,140	12	18	1	31	14.49	23	2	2	3	1	15	2	3	2	1	23	16	28	....	44	32	2	10	20.56
East Kingston	576	2	2	.. .	4	6.94	4	....	....	....	....	1	....	....	....	....	1	3	6	....	9	5	3	1	15.62
Epping	1,536	14	10	....	24	15.62	16	6	....	2	...	11	....	....	....	....	11	23	17	....	40	34	1	5	26.04
Exeter	3,569	26	21	....	47	13.16	27	12	....	3	5	20	2	2	....	1	25	15	35	....	50	45	4	1	14.00
Fremont	624	9	5	....	14	22.43	11	....	1	...	2	3	....	....	1	1	5	6	4	....	10	8	1	1	16.02
Greenland	695	5	3	....	8	11.50	7	....	1	....	....	6	....	....	....	...	6	4	7	....	11	11	....	....	15.82
Hampstead	959	3	1	....	4	4.17	4	....	....	....	....	9	....	....	....	....	9	9	5	1	15	1	....	14	15.64
Hampton	1,184	6	2	....	8	6.75	8	....	....	....	....	6	....	....	....	2	8	12	7	....	19	18	1	....	16.04
Hampton Falls	678	4	3	....	7	10.32	6	1	...	....	....	4	....	....	2	....	6	3	3	1	7	7	. ..	....	10.32
Kensington	614	3	4	....	7	11.40	5	....	1	....	1	7	....	....	1	....	8	10	3	....	13	11	....	2	21.88

Kingston	1,080	3	6	....	9	8.33	9	....	....	....	...	3	....	....	....	5	8	11	10	....	21	17	....	4	19.44
Londonderry	1,363	6	8	....	14	10.27	11	1	1	1	....	9	....	1	....	1	11	7	13	....	20	17	....	3	14.67
Newcastle	610	6	3		9	14.75	8	....	....	....	1	3	....	....	....	....	3	5	2	...	7	....	....	7	11.47
Newington	433	1	...	....	1	2.30	1	....	....	....	....	1	....	....	....	....	1	5	4	...	9	8	.	1	20.78
Newmarket	2,368	31	22	....	53	22.38	28	17	....	8	..	16	15	2	1	...	34	29	30	....	59	46	12	1	24.91
Newton	1,006	9	2	....	11	12.93	8	....	....	....	3	10	....	....	1	1	12	7	8	....	15	15	....	....	14.91
North Hampton	774	6	8	1	15	19.37	12	1	....	2	....	2	....	....	....	5	7	5	5	1	11	9	....	2	14.21
Northwood	1,345	8	14	....	22	16.35	21	1	....	....	....	11	....	....	....	1	12	13	10	....	23	20	...	3	17.10
Nottingham	1,095	4	8	..	12	10.95	11	....	....	....	1	5	....	....	....	....	5	4	10	....	14	10	.	4	12.78
Plaistow	1,002	2	1	....	3	2.99	2	....	....	....	1	3	2	1	2	....	8	2	7	...	9	5	2	2	8.98
Portsmouth	9,690	79	62	6	147	14.86	103	16	9	15	4	76	10	5	5	18	114	101	135	2	238	146	18	74	24.56
Raymond	1,053	6	4	....	10	9.49	10	....	....	....	....	6	....	2	....	....	8	7	9	....	16	16	....	....	15.18
Rye	1,111	8	13	....	21	18.90	17	1	2	1	....	5	....	1	....	....	6	6	13	..	19	19	..	....	17.10
Salem	1,809	6	11	....	17	9.39	14	1	..	1	1	10	1	1	1	....	13	13	13	....	26	18	1	7	14.31
Sandown	500	1	1	....	2	4.00	1	1	....	....	..	3	....	....	....	....	3	3	5	...	8	5	1	2	16.00
Seabrook	1,745	13	13	....	26	14.91	22	....	....	2	2	21	....	....	....	....	21	9	12	....	21	19	..	2	12.03
South Hampton	383	2	4	....	6	15.66	5	....	....	1	....	....	....	....	....	....	....	3	5	....	8	8	...	..	20.89
South Newmarket	829	9	3	....	12	14.47	11	....	1	....	....	12	....	..	....	....	12	6	3	..	9	7	2	..	10.85
Stratham	720	2	5	....	7	9.72	5	....	1	....	1	3	....	....	....	....	3	4	2	..	6	5	....	1	8.33
Windham	695	5	4	....	9	12.94	9	....	....	....	....	2	....	....	....	....	2	4	10	....	14	9	...	5	20.14
Total	49,064	333	299	8	640	13.04	485	65	20	41	29	[illegible]	33	22	18	41	447	410	[illegible]	5	[illegible]	[illegible]	[illegible]	127	14.56

* Died at county farm. 19.

STRAFFORD COUNTY.

TOWNS.	Population in 1880.	BIRTHS.										MARRIAGES.						DEATHS.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	Husband Americ'n.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Barrington	1,497	8	5	....	13	8.65	12	....	....	...	1	6	....	1	....	....	7	10	7	....	17	16	....	1	11.35
Dover	11,687	123	108	..	231	19.76	100	78	22	20	11	79	14	9	6	5	113	133	165	5	303	233	39	31	25.92
Durham	962	1	....	....	1	1.03	1	...	...	....	...	2	....	....	....	....	2	1	5	....	6	4	....	2	6.23
Farmington	3,044	19	27	2	48	15.76	46	1	....	1	....	26	....	....	1	1	28	26	35	1	62	54	1	7	20.63
Lee	715	2	5	....	7	9.79	5	1	....	....	1	4	....	....	....	....	4	4	6	....	10	7	....	3	13.98
Madbury	397	1	1	....	2	5.03	2	....	....	....	....	2	....	....	....	....	2	3	3	....	6	6	....	....	15.11
Middleton	355	4	1	....	5	14.08	3	1	1	....	..	2	....	....	....	....	2	....	1	....	1	1	....	....	2.81
Milton	1,516	10	6	....	16	10.55	16	....	...	...	...	15	....	1	....	4	20	8	8	....	16	14	....	2	10.55
New Durham	772	11	4	....	15	19.43	13	2	....	....	....	7	....	1	....	....	8	5	5	....	10	6	....	4	12.95
Rochester	5.784	48	36	1	85	14.52	52	22	7	2	2	63	10	2	2	11	88	24	31	2	57	50	4	3	9.85
Rollinsford	1,712	28	26	....	54	31.54	7	43	1	3	....	13	9	1	....	....	23	11	13	....	24	23	1	....	14.01
Somersworth	5,586	74	54	1	129	23.09	23	95	2	6	3	55	20	1	4	7	87	45	47	....	92	71	18	3	16.46
Strafford	1,531	4	10	1	15	9.79	14	1	....	....	....	4	....	....	....	....	4	6	9	....	15	13	....	2	9.79
Total	35,558	333	283	5	621	17.46	294	244	33	32	18	278	53	16	13	28	388	276	335	8	619	498	63	58	17.40

BELKNAP COUNTY.

TOWNS.	Population in 1880.	BIRTHS.										MARRIAGES.						DEATHS.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	Husband Americ'n.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Alton	1,476	8	5	....	13	8.80	11	....	1	1	....	6	....	....	....	1	7	9	8	....	17	15	1	1	11.51
Barnstead	1,296	4	2	....	6	4.62	6	....	....	....	....	9	....	1	1	2	13	9	2	....	11	7	....	4	8.48
Belmont	1,226	9	7	....	16	13.05	16	....	....	....	....	6	....	1	....	1	8	12	15	....	27	24	....	3	22.02
Centre Harbor	521	3	5	....	8	15.16	8	....	....	....	....	7	....	....	1	1	9	2	3	....	5	5	....	....	9.59
Gilford	2,821	27	24	....	51	18.07	33	12	1	3	2	12	4	3	....	2	21	22	26	....	48	41	5	2	17.01
Gilmanton	1,485	16	9	1	26	17.50	11	4	....	....	11	7	....	....	....	....	7	15	12	....	27	18	....	9	18.18
Laconia	3,790	30	49	....	79	20.84	35	29	4	5	6	26	11	3	3	2	45	36	40	2	78	60	5	13	20.58
Meredith	1,800	14	14	....	28	15.55	26	1	1	....	....	13	....	....	....	1	14	14	12	....	26	21	1	4	14.44
New Hampton	1,059	5	7	....	12	11.33	11	....	....	1	....	2	....	....	....	....	2	4	7	....	11	8	1	2	10.38
Sanbornton	1,192	3	3	....	6	5.03	3	....	....	....	3	9	....	....	....	1	10	10	9	....	19	18	....	1	15.93
Tilton	1,282	7	4	....	11	8.58	5	3	....	....	3	10	....	1	1	2	14	4	16	....	20	15	2	3	15.59
Total	17,948	126	129	1	256	14.26	165	49	7	10	25	107	15	9	6	13	150	137	150	2	289	232	15	42	16.10

CARROLL COUNTY.

TOWNS.	Population in 1880.	Births.										Marriages.						Deaths.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	HusbandAmeric'n.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Albany	361	4	1	....	5	13.85	4	....	1	....	...	4	...	....	....	....	4	1	3	....	4	....	....	4	11.08
Bartlett	1,044	4	14	1	19	18.19	11	5	2	1	....	9	2	1	....	....	12	5	9	....	14	14	....	....	13.40
Brookfield	428	2	3	....	5	11.68	5	....	....	....	....	4	....	....	....	1	5	3	2	....	5	4	....	1	11.68
Chatham	421	2	4	....	6	14.25	6	.. .	....	....	....	3	....	....	....	2	5	4	....	....	4	4	....	....	9.50
Conway	2,094	9	16	....	25	11.93	20	....	....	2	3	32	....	1	..	....	33	16	17	..	33	31	1	1	15.75
Eaton	629	3	3	....	6	9.53	6	....	....	....	. ..	8	....	....	....	1	9	2	5	...	7	7	....	....	11.12
Effingham	865	7	5	....	12	13.87	12	....	....	....	....	5	....	....	....	....	5	4	11	....	15	14	....	1	17.34
Freedom	714	3	6	....	9	12.60	9	....	....	....	....	4	....	....	....	2	6	3	5	....	8	6	....	2	11.20
Hart's Location	70	....	....	....	....	....	....	....	....	....	....	.. .	....	....	....	....	....	....	...	....	....	....	....	....	......
Jackson	464	6	7	....	13	28.01	13	....	....	....	....	8	....	....	...	....	8	1	1	....	2	2	....	....	4.31
Madison	586	2	4	....	6	10.23	4	...	....	...	2	6	....	1	...	....	7	7	3	....	10	9	....	1	17.06
Moultonborough	1,254	6	7	....	13	10.36	12	....	....	....	1	6	..	....	....	....	6	14	13	....	27	26	1	....	21.53
Ossipee	1,782	12	6	1	19	10.66	17	2	....	....	....	14	....	....	...	2	16	18	14	....	32	17	1	14	17.78
Sandwich	1,701	12	14	1	27	15.87	19	....	1	1	6	13	....	....	....	1	14	12	12	....	24	23	....	1	14.10
Tamworth	1,274	3	8	....	11	8.63	11	....	....	....	....	8	....	....	....	2	10	7	7	....	14	13	....	1	10.98
Tuftonborough	923	8	5	....	13	14.08	10	....	1	1	1	6	....	....	....	....	6	11	6	....	17	16	....	1	18.41
Wakefield	1,392	10	15	....	25	17.95	18	4	2	...	1	14	....	....	1	3	18	8	7	....	15	13	1	1	10.77
Wolfeborough	2,222	14	11	6	31	13.95	20	....	....	1	10	13	....	1	....	4	18	18	20	....	38	30	....	8	18.00
Total	18,224	107	129	9	245	13.44	197	11	7	6	24	157	2	4	1	18	182	134	135	....	269	229	4	36	14.77

MERRIMACK COUNTY.

TOWNS.	Population in 1880.	Births.										Marriages.						Deaths.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	HusbandAmeric'n.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Allenstown	1,707	21	27	....	48	28.11	5	39	1	3	....	4	5	....	....	1	10	3	8	....	11	6	3	2	6.46
Andover	1,204	7	8	....	15	12.45	13	1	....	....	1	6	...	1	....	1	8	13	12	....	25	24	....	1	20.76
Boscawen	1,381	6	7	....	13	9.41	11	1	....	1	....	3	....	....	1	...	4	14	7	....	21	10	3	8	15.20
Bow	734	....	5	....	5	6.81	4	1	....	....	....	2	....	....	....	....	2	8	8	....	16	12	....	4	21.79
Bradford	950	4	2	....	6	6.31	6	...	....	....	....	6	....	1	....	...	7	6	8	....	14	12	....	2	12.63
Canterbury	1,033	2	4	1	7	6.77	6	....	....	1	....	5	....	1	...	3	9	8	12	....	20	14	1	5	19.36
Chichester	784	6	4	2	12	15.30	10	....	....	2	....	1	..	....	....	....	1	4	5	1	10	10	....	..	12.75
Concord	13,843	145	125	....	270	19.50	150	64	22	27	7	97	11	8	9	2	127	145	119	..	264*	231	30	3	19.07
Danbury	760	4	2	....	6	7.89	6	....	....	....	....	4	....	....	1	....	5	6	5	....	11	11	....	....	14.47
Dunbarton	708	6	5	1	12	16.94	12	..	....	....	....	3	....	....	....	....	3	4	4	....	8	7	....	1	11.29
Epsom	909	5	5	....	10	11.00	10	...	....	....	....	8	....	....	....	....	8	6	5	....	11	11	....	....	12.10
Franklin	3,265	32	34	....	66	20.21	34	19	9	2	2	24	....	1	2	1	28	23	33	....	56	49	4	3	17.15
Henniker	1,326	8	9	....	17	12.82	15	1	....	1	....	6	....	....	....	1	7	8	20	...	28	28	...	....	21.11
Hill	667	3	5	....	8	11.99	4	....	1	1	2	4	....	....	....	1	5	2	5	....	7	6	....	1	10.49
Hooksett	1,766	14	7	4	25	14.15	10	11	2	....	2	2	....	1	1	....	4	9	7	....	16	13	3	..	9.06
Hopkinton	1,836	11	10	....	21	11.43	18	....	1	...	2	9	....	1	...	1	11	25	20	....	45	34	1	10	25.40
Loudon	1,221	9	8	....	17	13.92	14	1	1	1	....	7	....	....	....	1	8	11	14	....	25	22	1	2	20.47
Newbury	590	11	5	....	16	27.11	15	....	1	....	....	5	....	...	1	....	6	5	7	....	12	12	....	....	20.33
New London	875	3	2	....	5	5.71	5	....	....	....	....	9	1	....	....	....	10	3	6	....	9	9	....	....	10.28
Northfield	918	3	4	....	7	7.62	7	....	....	....	....	8	....	....	1	1	10	5	3	....	8	8	....	....	8.71
Pembroke	2,797	14	23	....	37	13.22	16	9	4	5	3	11	6	1	1	3	22	14	15	....	29	21	6	2	10.36
Pittsfield	1,974	26	25	...	51	25.88	35	8	2	4	2	19	2	....	3	5	29	27	22	....	49	44	2	3	24.82
Salisbury	795	3	6	....	9	11.32	9	....	...	....	....	4	....	....	....	....	4	5	8	....	13	12	....	1	16.35
Sutton	993	10	6	....	16	16.11	15	....	....	....	1	7	....	....	....	....	7	15	7	....	22	19	....	3	22.15
Warner	1,537	9	9	....	18	11.71	15	1	....	1	1	10	....	....	1	2	13	10	19	1	30	28	....	2	13.01
Webster	647	2	1	1	4	6.17	3	....	....	....	1	3	....	....	....	....	3	12	8	....	20	19	....	1	30.91
Wilmot	1,080	7	6	....	13	12.03	9	....	3	....	1	8	....	....	1	1	10	10	6	....	16	15	....	1	14.81
Total	46,300	371	354	9	734	15.85	457	156	47	49	25	275	25	15	22	24	361	401	393	2	796	687	54	55	17.19

* Thirty-seven from public institutions.

HILLSBOROUGH COUNTY.

TOWNS.	Population in 1880.	BIRTHS.										MARRIAGES.						DEATHS.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	Husband Americ'n.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Amherst	1,225	13	8	....	21	17.14	16	1	1	2	1	5	....	....	1	....	6	6	10	....	16	16	...	....	13.06
Antrim	1,172	7	14	....	21	17.91	17	2	....	2	...	9	....	....	...	1	10	15	10	....	25	24	....	1	21.33
Bedford	1,204	3	10	...	13	10.79	10	1	1	1	...	7	....	...	....	...	7	12	10	....	22	17	3	2	18.52
Bennington	443	8	3	....	11	24.83	6	2	1	1	1	8	....	....	....	....	8	3	6	....	9	7	1	1	20.31
Brookline	698	1	9	....	10	14.32	10	....	....	....	....	7	....	...	....	....	7	8	5	....	13	12	1	....	18.62
Deering	674	3	....	....	3	4.45	2	....	1	....	....	8	....	....	....	....	8	5	9	....	14	10	...	4	20.77
Francestown	937	9	10	....	19	20.27	17	1	1	....	....	6	....	....	....	....	6	1	8	....	9	9	....	....	9.60
Goffstown	1,699	19	16	1	36	21.18	30	3	....	1	2	8	....	....	1	1	10	12	23	....	35	30	1	4	20.60
Greenfield	649	9	9	....	18	27.73	10	3	....	....	5	3	....	....	....	....	3	13	6	....	19	18	....	1	29.27
Greenville	1,072	14	13	....	27	25.18	11	13	1	2	....	6	2	....	2	....	10	13	7	....	20	17	2	1	18.41
Hancock	689	9	4	....	13	18.86	8	5	....	....	....	1	....	....	1	....	2	5	10	....	15	13	....	2	21.77
Hillsborough	1,646	13	25	....	38	23.08	31	4	3	....	....	20	....	2	....	4	26	14	19	....	33	32	1	....	20.04
Hollis	1,077	3	6	....	9	8.34	7	....	...	1	1	7	....	....	....	1	8	12	10	...	22	16	....	6	20.42
Hudson	1,045	6	6	....	12	11.38	11	....	....	1	....	7	...	1	....	....	8	11	7	...	18	15	1	2	17.22
Litchfield	291	....	....	....	.....	....	....	....	...	....	....	2	....	....	....	....	2	1	4	....	5	4	....	1	17.18
Lyndeborough	818	4	5	....	9	11.00	8	1	....	....	....	7	....	1	....	1	9	4	3	....	7	7	....	...	8.55
Manchester	32,630	536	545	25	1106	33.89	152	398	54	43	459	149	144	24	21	66	404	358	440	23	821	560	220	41	24.54
Mason	645	6	2	....	8	12.40	4	3	....	....	1	5	....	....	....	...	5	6	5	....	11	8	2	1	17.05
Merrimack	1,042	7	6	1	14	13.43	11	1	1	1	....	2	....	....	....	....	2	6	4	....	10	8	1	1	9.59
Milford	2,398	25	19	....	44	18.34	29	6	7	2	....	20	....	....	1	....	21	23	20	....	43	42	1	....	17.93
Mont Vernon	517	2	3	...	5	9.67	3	1	....	....	1	4	....	2	....	....	6	4	8	....	12	11	1	....	23.21
Nashua	13,397	176	183	4	363	27.09	142	165	18	31	7	102	43	21	11	13	190	153	180	10	343	216	45	82	25.60

New Boston	1,144	8	6	....	14	12.23	10	2	....	2	....	4	....	....	1	....	5	14	9	....	23	22	1	....	20.10
New Ipswich	1,222	17	9	1	27	22.09	16	7	1	....	3	5	....	....	....	3	8	8	9	....	17	15	2	....	13.91
Pelham	848	7	3	....	10	11.79	7	....	2	....	1	2	....	2	....	....	4	11	11	....	22	21	....	1	25.94
Peterborough	2,206	18	18	....	36	16.31	24	9	3	....	....	14	....	....	1	....	15	24	19	....	43	41	2	...	19.49
Sharon	203	1	1	...	2	9.85	2	....	....	..	...	....	....	....	....	....	..	1	2	....	3	2	....	1	14.77
Temple	402	....	4	....	4	9.95	4	....	....	....	...	5	....	....	....	...	5	5	3	....	8	7	....	1	19.90
Weare	1,829	15	9	....	24	13.12	19	2	1	....	2	9	....	....	....	....	9	26	17	....	43	40	....	3	23.51
Wilton	1,747	15	19	....	34	19.46	15	8	4	5	2	10	.	....	....	....	10	9	11	....	20	18	1	1	11.44
Windsor	65	1	....	....	1	15.38	1	...	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....	....	......
Total	75,634	955	965	32	1952	25.80	633	638	100	95	486	443	189	53	40	90	815	783	885	33	1701	1258	286	157	22.48

CHESHIRE COUNTY.

TOWNS.	Population in 1880.	Births.										Marriages.						Deaths.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	Husband Americ'n.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Alstead	1,037	5	6	....	11	10.60	8	....	....	1	2	5	....	....	....	1	6	10	5	....	15	13	2	....	14.46
Chesterfield	1,173	8	4	1	13	11.08	10	1	1	1	....	7	....	....	1	...	8	6	11	....	17	16	1	....	14.49
Dublin	456	3	....	....	3	6.57	3	....	....	....	....	1	....	....	....	....	1	5	11	...	16	14	....	2	35.08
Fitzwilliam	1,187	13	8	1	22	18.53	13	5	3	1	....	10	....	....	....	2	12	6	9	....	15	12	....	3	12.63
Gilsum	663	3	6	....	9	13.57	8	....	....	1	....	3	....	....	....	1	4	8	5	...	13	12	....	1	19.60
Harrisville	870	8	10	....	18	20.68	6	10	....	1	1	2	2	....	1	....	5	7	8	....	15	12	1	2	17.24
Hinsdale	1,868	17	26	....	43	23.01	28	9	3	3	....	14	1	....	....	....	15	16	13	....	29	23	4	2	15.52
Jaffrey	1,267	4	7	....	11	8.68	6	4	...	....	1	14	....	2	....	1	17	14	12	2	28	19	4	5	22.09
Keene	6,784	79	72	1	152	22.40	110	24	8	7	3	72	6	3	6	5	92	56	58	....	114	100	10	4	16.80
Marlborough	1,286	23	11	....	34	26.20	16	8	3	....	7	8	2	....	....	1	11	14	17	...	31	16	3	12	23.95
Marlow	701	5	5	....	10	14.26	10	....	....	....	....	1	....	1	....	....	2	5	7	...	12	10	....	2	17.11
Nelson	438	3	2	....	5	11.41	5	....	....	....	....	2	....	....	....	....	2	4	2	....	6	5	....	1	13.69
Richmond	669	3	3	....	6	8.96	3	1	....	1	1	5	....	....	....	1	6	4	11	....	15	13	..	2	22.42
Rindge	934	2	2	1	5	5.35	3	....	....	2	....	9	....	....	....	1	10	6	2	....	8	5	1	2	8.56
Roxbury	126	....	....	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	......
Stoddard	553	4	5	....	9	16.27	5	....	1	1	2	...	....	....	....	1	1	6	8	....	14	10	.. .	4	25.31
Sullivan	382	3	4	....	7	18.32	6	....	1	....	....	....	....	....	....	....	....	3	1	...	4	2	....	2	10.57
Surry	326	1	1	....	2	6.13	1	1	....	...	....	...	1	....	....	....	1	....	4	....	4	4	....	...	12.26
Swanzey	1,661	18	20	....	38	22.87	29	3	3	2	1	11	1	1	....	....	13	16	12	....	28	20	4	4	16.85
Troy	796	5	7	....	12	15.07	7	3	1	1	....	5	1	....	....	....	6	4	8	...	12	12	...	....	15.07
Walpole	2,018	24	24	2	50	24.77	21	11	7	7	4	8	....	....	....	1	9	11	17	2	30	23	1	6	14.86
Westmoreland	1,095	7	4	....	11	10.04	9	1	....	....	1	10	....	....	....	2	12	12	16	...	28*	16	....	12	25.57
Winchester	2,444	26	14	....	40	16.37	26	6	4	1	3	....	....	....	....	....	....	25	15	....	40	33	3	4	16.37
Total	28,734	264	241	6	511	17.78	333	87	35	30	26	187	14	7	8	17	233	238	252	4	494	390	34	70	17.19

*Died at county farm, 8.

SULLIVAN COUNTY.

TOWNS.	Population in 1880.	Births.										Marriages.						Deaths.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	Husband Americ'n.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Acworth	982	4	6	....	10	10.18	10	....	....	....	....	2	....	....	....	1	3	11	8	....	19	15	4	....	19.34
Charlestown	1,587	10	10	....	20	12.60	18	....	1	....	1	4	....	....	....	....	4	15	15	....	30	23	2	5	18.90
Claremont	4,704	45	39	2	86	18.28	48	26	7	3	2	20	4	4	2	3	33	35	32	....	67	49	9	9	14.24
Cornish	1,156	2	3	....	5	4.32	5	....	....	....	....	....	....	....	....	2	2	13	11	....	24	21	....	3	20.76
Croydon	608	5	8	....	13	21.38	13	....	....	....	....	2	....	....	....	....	2	5	8	....	13	13	....	....	21.38
Goshen	511	2	3	....	5	9.78	5	....	....	....	....	2	....	....	....	2	4	4	7	....	11	10	....	1	21.52
Grantham	540	6	4	....	10	18.51	9	....	....	1	....	6	....	....	....	....	6	2	4	....	6	5	....	1	11.11
Langdon	364	4	3	....	7	19.23	5	....	2	....	....	2	....	....	....	....	1	1	1	1	3	....	....	3	8.24
Lempster	602	3	1	....	4	6.64	3	....	....	....	1	....	....	....	....	....	....	4	5	....	9	4	1	4	14.95
Newport	2,612	27	22	....	49	18.75	36	3	3	7	....	23	....	....	2	1	26	18	12	....	30	21	6	3	11.47
Plainfield	1,372	11	6	....	17	12.39	15	....	....	....	2	8	....	1	....	....	9	16	5	....	21	19	....	2	15.30
Springfield	732	4	3	....	7	9.56	7	....	....	....	....	5	....	....	....	....	5	2	1	....	3	3	....	....	4.09
Sunapee	895	7	7	....	14	15.66	12	....	1	1	....	3	....	....	....	1	4	5	4	....	9	6	....	3	10.05
Unity	814	7	2	....	9	11.05	8	....	....	....	1	3	....	....	....	....	3	13	11	....	24	19	1	4	29.48
Washington	682	5	6	....	11	16.12	11	....	....	....	....	6	....	....	....	1	7	8	7	....	15	13	....	2	21.99
Total	18,161	142	123	2	267	14.70	205	29	14	12	7	85	4	5	4	11	109	152	131	1	284	221	23	40	15.63

GRAFTON COUNTY.

TOWNS.	Population in 1880.	BIRTHS.										MARRIAGES.						DEATHS.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	Husband Americ'n.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Alexandria	828	7	4	....	11	13.28	3	....	....	....	8	6	....	..	....	....	6	....	3	....	3	3	....	....	3.62
Ashland	960	13	5	..	18	18.75	14	2	.. .	....	2	3	1	....	2	1	7	4	9	....	13	10	....	3	13.54
Bath	1,032	8	7	....	15	14.53	7	3	1	...	4	5	....	....	....	2	7	1	7	....	8	6	...	2	7.75
Benton	378	....	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	......
Bethlehem	1,400	14	16	....	30	21.42	11	12	....	7	....	5	2	....	....	...	7	9	7	...	16	11	2	3	11.42
Bridgewater	384	2	....	....	2	5.20	2	....	....	....	....	2	....	....	....	1	3	8	2	....	10	7	....	3	26.04
Bristol	1,352	11	8	..	19	14.05	5	....	....	....	14	10	...	....	....	3	13	10	14	....	24	18	....	6	17.75
Campton	1,163	4	9	....	13	11.17	13	....	....	....	....	7	....	....	....	....	7	6	9	....	15	11	1	3	12.89
Canaan	1,762	21	11	....	32	18.10	20	3	7	1	1	10	1	1	..	1	13	15	20	...	35	31	3	1	19.86
Dorchester	585	5	5	...	10	17.05	7	2	....	1	....	3	....	....	1	....	4	2	4	....	6	5	..	1	10.25
Easton	302	....	6	....	6	19.86	4	1	....	....	1	2	....	....	....	....	2	2	3	....	5	3	1	1	16.55
Ellsworth	209	2	....	...	2	9.56	1	....	....	1	....	....	....	....	....	....	....	2	4	....	6	6	..	....	28.70
Enfield	1,680	9	13	....	22	13.09	15	3	3	1	....	7	....	....	....	1	8	13	14	....	27	26	1	....	16.07
Franconia	550	4	1	....	5	9.09	4	1	....	....	....	1	....	....	....	...	1	3	4	....	7	5	1	1	12.72
Grafton	934	9	7	...	16	17.13	14	1	....	....	1	8	....	....	....	...	8	8	9	..	17	13	....	4	18.20
Groton	566	3	9	....	12	21.58	9	2	....	....	1	3	....	....	....	....	3	5	7	...	12	12	....	....	21.58
Hanover	2,147	10	13	1	24	11.17	14	5	3	2	....	12	2	2	1	1	18	9	18	....	27	26	1	....	12.57
Haverhill	2,455	15	12	....	27	10.99	15	2	5	2	3	11	....	....	4	3	18	27	18	1	46	12	2	32	18.73
Hebron	329	2	2	....	4	12.15	4	...	....	...	....	4	....	....	....	....	4	....	3	....	3	2	....	1	9.11
Holderness	703	1	2		3	4.26	3	....	....	....	....	3	....	2	....	....	5	6	5	....	11	11	...	....	15.64
Landaff	506	5	7	....	12	23.71	9	1	1	..	1	2	....	....	....	....	2	2	7	....	9	9	....	....	17.78
Lebanon	3,354	39	33	....	72	21.46	51	12	6	3	....	27	....	2	1	1	31	33	33	....	66	59	4	3	19.67
Lincoln	65	1	....	....	1	15.38	1	....	....	....	....	....	....	....	....	....	....	....	...	....	...	....	....	....	......

Lisbon	1,807	14	15	....	29	16.04	23	....	4	2	....	16	....	2	....	2	20	12	9	....	21	21	....	....	11.62
Littleton	2,936	27	51	....	78	26.56	38	27	8	5	....	22	4	5	4	6	41	24	26	....	50	40	6	4	17.02
Livermore	103	....	...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	....	....	....	....	......
Lyman	654	3	6	....	9	13.76	6	2	1	....	....	1	....	....	1	....	2	5	4	....	9	4	1	4	13.76
Lyme	1,313	12	8	....	20	15.23	19	....	1	....	....	7	....	2	1	1	11	8	10	....	18	18	....	....	14.47
Monroe	504	9	10	...	19	37 69	15	....	3	1	..	4	....	....	....	....	4	5	2	....	7	7	....	....	13.88
Orange	335	2	7	....	9	26.86	5	2	....	1	1	1	1	....	1	..	3	4	....	....	4	4	....	....	11.94
Orford	1,050	18	9	....	27	25.71	23	1	1	2	....	13	....	....	....	....	13	7	8	....	15	14	...	1	14.28
Piermont	752	5	6	....	11	14.62	10	....	1	....	....	5	....	1	1	....	7	5	12	...	17	17	....	....	22 60
Plymouth	1,719	16	13	...	29	16.86	21	3	1	....	4	13	...	1	....	1	15	20	14	....	34	29	....	5	19.78
Rumney	1,050	5	12	....	17	16.19	15	2	....	....	....	10	1	..	1	...	12	9	12	....	21	20	....	1	20.00
Thornton	775	3	1	....	4	5.16	4	....	....	....	....	10	....	....	....	....	10	6	3	....	9	7	....	2	11.61
Warren	786	7	4	....	11	13.99	9	....	1	....	1	10	....	....	2	3	15	8	3	....	11	9	1	1	13.99
Waterville	54	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...	1	....	....	1	1	....	....	18.51
Wentworth	939	5	3	1	9	9.58	9	....	....	....	....	3	....	....	....	....	3	15	8	1	24	23	....	1	25.55
Woodstock	367	2	1	....	3	8.17	3	....	....	....	....	3	....	....	....	1	4	2	2	....	4	3	...	1	10.89
Total	38,788	313	316	2	631	16.26	426	87	47	29	42	249	12	18	20	28	327	296	313	2	611	503	24	84	15.75

COÖS COUNTY.

TOWNS.	Population in 1880.	BIRTHS.										MARRIAGES.						DEATHS.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	Husband American.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Berlin	1,144	40	44	....	84	73.42	16	57	3	7	1	1	4	..	1	....	6	13	6	....	19	14	5	....	16.60
Carroll	632	6	3	....	9	14.24	3	5	1	....	....	2	....	....	....	....	2	....	....	....	....	....	....	...	......
Clarksville	328	2	1	...	3	9.14	2	1	..	....	....	1	....	....	2	....	3	1	1	....	2	1	1	....	6.09
Colebrook	1,580	15	17	1	33	20.88	17	1	8	7	....	13	1	4	3	2	23	11	14	....	25	18	4	3	15.82
Columbia	762	7	8	....	15	19.68	6	1	3	2	3	1	....	....	....	....	1	5	4	....	9	7	1	1	11.81
Dalton	570	4	5	....	9	15.78	....	....	..	...	9	2	....	....	....	2	4	6	3	....	9	9	....	....	15.78
Dummer	464	4	6	....	10	21.55	9	....	....	1	....	5	....	....	1	....	6	2	1	....	3	3	....	....	6.46
Errol	161	4	....	....	4	24.84	3	....	...	....	1	5	....	...	....	1	6	1	2	....	3	3	...	....	18.63
Gorham	1,383	39	27	1	67	48.44	35	22	7	3	....	15	1	....	2	1	19	11	3	..	14	11	3	....	10.12
Jefferson	951	11	9	....	20	21.03	15	1	1	3	....	8	1	....	....	1	10	6	7	....	13	10	1	2	13.66
Lancaster	2,721	23	24	....	47	17.27	26	15	4	1	1	16	3	2	4	1	26	13	20	....	33	27	1	5	12.13
Milan	895	12	15	....	27	30.16	16	8	2	1	....	1	1	1	....	....	3	5	3	....	8	7	1	....	8.93
Millsfield	62	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...	....	....	......
Northumberland	1,062	15	9	....	24	22.59	11	6	1	2	4	3	1	....	1	1	6	4	6	....	10	10	....	....	9.41
Pittsburg	581	....	....	.	....	....	....	....	....	....	....	....	....	...	1	....	1	2	3	....	5	2	....	3	8.60
Randolph	203	1	...	....	1	4.92	1	....	....	....	....	1	....	....	....	1	2	....	2	....	2	1	....	1	9.85
Shelburne	252	4	3	....	7	27.77	3	4	....	....	...	5	....	....	....	....	5	2	3	....	5	4	....	1	19.84
Stark	690	10	5	1	16	23.18	10	1	2	....	3	4	1	....	1	1	7	4	4	1	9	9	....	....	13.04
Stratford	1,016	6	10	....	16	15.74	13	2	1	....	....	5	1	2	1	....	9	5	6	..	11	8	....	3	10.82
Stewartstown	958	14	8	1	23	24.00	12	2	2	1	6	2	2	....	3	....	7	12	5	...	17†	13	1	3	17.64
Whitefield	1,828	27	20	....	47	25.71	20	14	5	2	6	14	5	....	2	1	22	18	11	1	30	22	2	6	16.41
Total	18,580*	244	214	4	462	24.86	218	140	40	30	34	104	21	9	22	12	168	121	104	2	227	179	20	28	12.21

* This includes the population of the unincorporated towns.

† Died at county farm, 5.

RECAPITULATION BY COUNTIES.

COUNTIES.	Population in 1880.	BIRTHS.										MARRIAGES.						DEATHS.							
		Sex.					Parentage.											Sex.				Nativity.			
		Male.	Female.	Not stated.	Total.	Rate per 1,000.	Both American.	Both foreign.	American mother and for'n father.	American father and for'n mother.	Not stated.	Both American.	Both foreign.	Husband Americ'n.	Wife American.	Not stated.	Total.	Male.	Female.	Not stated.	Total.	American.	Foreign.	Not stated.	Death rate per 1,000.
Rockingham	49,064	333	299	8	640	13.04	485	65	20	41	29	333	33	22	18	41	447	410	496	5	911	668	56	187	18.56
Strafford	35,558	333	283	5	621	17.46	294	244	33	32	18	278	53	16	13	28	388	276	335	8	619	498	63	58	17.40
Belknap	17,948	126	129	1	256	14.26	165	49	7	10	25	107	15	9	6	13	150	137	150	2	289	232	15	42	16.10
Carroll	18,224	107	129	9	245	13.44	197	11	7	6	24	157	2	4	1	18	182	134	135	....	269	229	4	36	14.77
Merrimack	46,300	371	354	9	734	15.85	457	156	47	49	25	275	25	15	22	24	361	401	393	2	796	687	54	55	17.19
Hillsborough	75,634	955	965	32	1952	25.80	633	638	100	95	486	443	189	53	40	90	815	783	885	33	1701	1258	286	157	22.48
Cheshire	28,734	264	241	6	511	17.78	333	87	35	30	26	187	14	7	8	17	233	238	252	4	494	390	34	70	17.19
Sullivan	18,161	142	123	2	267	14.70	205	29	14	12	7	85	4	5	4	11	109	152	131	1	284	221	23	40	15.63
Grafton	38,788	313	316	2	631	16.26	426	87	47	29	42	249	12	18	20	28	327	296	313	2	611	503	24	84	15.75
Coös	18,580	244	214	4	462	24.86	218	140	40	30	34	104	21	9	22	12	168	121	104	2	227	179	20	28	12.21
Total	346,991	3188	3053	78	6319	18.21	3413	1506	350	334	716	2218	368	158	154	282	3180	2948	3194	59	6201	4847	578	758	17.87

BIRTHS.

There were reported for the year 6,319 births, 3,188 males and 3,053 females. The excess of male children is in about the same proportion as exists in other States. In 78 cases the sex is not stated. Under the head of parentage we find that 3,413 have parents both American; 1,506, parents both foreign; 350, American mother and foreign father; 334, American father and foreign mother; and 716, parentage not stated.

These figures present some interesting facts in connection with the subject of nativity of parents. The last census gave for this State a native population of 300,697; foreign-born, 46,294, — or, in other words, the foreign population was 10.45 per cent of the total population of the State, while the births from foreign parentage were 44 per cent of the American and 23.83 per cent of the total number of births for the year. It is probable that this rate should be increased by the greater part of those classed under "not stated" in the classification of parentage, as they undoubtedly belong largely to the foreign-born population. The columns of mixed parentage are very nearly balanced. Thus, it will be seen that while the foreign population is only about 10 per cent of the total, the births from foreign-born parents probably exceed 30 per cent of the total.

It is probable that the rate would be still further increased if there were a full registration of all births, as the deficiency is confined largely to the unreported among this class.

The same ratio in marriages does not by any means hold good. There were 2,218 marriages "both American," 368 "both foreign," and 282 "not stated." The columns "husband American" and "wife American" nearly balance.

The "both foreign" marriages were 16.59 per cent of the "both American," and 11.57 per cent of the total number of marriages. If the entire number classed under "not stated" were added to the column "both foreign," it would then be only 29.30 per cent of the marriages classed under "both American," and 20.44 per cent of the total number.

Of the 6,201 deaths 4,847 were native-born, 578 foreign-born, and 758 not stated. Those known to be foreign-born were 11.92 per cent of those known to be American-born. If the "not stated" are added to the "foreign-born," where doubtless many of them belong, they would then be 21.54 per cent of the total number of deaths.

TABLE 4.

BIRTHS BY COUNTIES, SHOWING PROPORTION OF MALES TO FEMALES, 1885.

COUNTIES.	Males.	Females.	Excess of Males.	Excess of Females.	Sex not stated.
Rockingham	333	299	34	....	8
Strafford	333	283	50	....	5
Belknap	126	129	....	3	1
Carroll	107	129	....	22	9
Merrimack	371	354	17	....	9
Hillsborough	955	965	....	10	32
Cheshire	264	241	23	....	6
Sullivan	142	123	19	....	2
Grafton	313	316	....	3	2
Coös	244	214	30	....	4
Total for State	3,188	3,053	135	....	78

TABLE 5.

PERCENTAGE OF AMERICAN AND FOREIGN BIRTHS, BY COUNTIES, 1885.

COUNTIES.	PARENTS.			Births with parentage not stated.
	American-born.	Foreign-born.	One foreign-born.	
Rockingham	75.78	10.15	9.53	29
Strafford	47.34	39.29	10.46	18
Belknap	64.45	19.14	6.64	25
Carroll	80.40	4.48	5.30	24
Merrimack	62.26	21.25	13.07	25
Hillsborough	32.42	32.68	9.98	486
Cheshire	65.16	17.02	12.72	26
Sullivan	76.77	10.86	9.73	7
Grafton	67.51	13.78	12.04	42
Coös	47.18	30.30	15.15	34
Total for State	54.01	23.83	10.82	716

This table shows the percentage of births more fully than was given above. It is interesting to note the percentages in different counties. It will be seen that in Hillsborough county the births of foreign-born parents exceed the native-born. Of course the foreign population is greatest in those counties having manufactories. This is illustrated by Hillsborough and Carroll counties, the latter having but few manufactories.

TABLE 6.

TWIN BIRTHS BY MONTHS AND COUNTIES.

COUNTIES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Colored Children.	
														M.	F.
Rockingham	1	....	....	..	2	....	...	....	....	1	....	1	5	....	1
Strafford	1	....	....	1	....	1	1	....	....	....	....	....	4	....	....
Belknap	....	...	1	....	..	...	....	....	..	....	....	....	1	....	....
Carroll	....	....	....	....	....	....	1	....	1	1	....	....	3	....	....
Merrimack	1	....	..	....	....	1	....	1	1	....	....	....	4	1	2
Hillsborough	....	1	1	2	2	2	....	1	1	1	3	1	15	....	1
Cheshire	....	.. .	..	2	....	....	....	....	1	2		....	5	....	....
Sullivan	....	....	1	....	....	1	...	...	....	2	1	....	5	....	....
Grafton	....	2	....	....	....	2	....	1	1	....	....	....	6	1	....
Coös	....	....	....	....	1	2	1	....	2	....	2	....	8	....	....
Total for State	3	3	3	5	5	9	3	3	7	7	6	2	56	2	4

TABLE 7.

BIRTHS BY SEX AND MONTHS, BY COUNTIES.

COUNTIES.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Not stated.	Total.	Grand total.
Rockingham	Males	29	22	26	29	22	24	28	35	19	41	26	32	..	333	
	Females	23	18	32	23	38	22	34	15	26	22	20	25	1	299	
	Not stated	1	2	...	1	...	...	2	...	2	...	...	...	..	8	640
Strafford	Males	36	23	43	32	25	21	37	27	20	19	19	31	..	333	
	Females	18	27	22	21	25	28	28	18	19	28	27	22	..	283	
	Not stated	1	...	1	1	...	...	...	1	...	...	1	...	..	5	621
Belknap	Males	8	19	15	6	15	8	6	10	13	11	7	8	..	126	
	Females	20	8	5	12	15	9	7	12	13	8	7	13	..	129	
	Not stated	...	...	...	...	...	...	...	...	...	...	1	...	..	1	256
Carroll	Males	14	8	11	2	6	14	12	3	9	6	12	9	1	107	
	Females	6	3	18	13	11	14	8	12	8	14	12	10	..	129	
	Not stated	...	...	..	1	...	3	2	1	1	...	1	...	..	9	245
Merrimack	Males	29	29	27	35	27	32	40	30	28	34	26	34	..	371	
	Females	24	26	42	34	18	33	27	34	35	32	24	25	..	354	
	Not stated	1	...	...	1	1	1	...	1	2	1	1	...	..	9	734
Hillsborough.	Males	70	71	85	84	87	81	96	97	75	70	66	72	1	955	
	Females	83	70	88	81	70	79	91	70	77	75	82	97	2	965	
	Not stated	2	2	2	4	...	2	3	1	3	7	...	6	..	32	1952
Cheshire	Males	16	22	19	31	25	16	32	19	24	26	14	20	..	264	
	Females	18	15	17	19	21	16	24	24	29	22	15	20	1	241	
	Not stated	...	...	1	1	3	1	...	...	...	...	...	...	..	6	511
Sullivan	Males	9	12	13	9	14	11	14	13	11	17	6	13	..	142	
	Females	12	4	17	11	12	15	8	12	7	12	5	8	..	123	
	Not stated	...	...	...	1	...	...	...	1	...	...	...	...	..	2	267
Grafton	Males	27	28	38	29	25	23	17	24	28	23	20	31	..	313	
	Females	15	29	28	42	29	20	26	26	31	21	22	27	..	316	
	Not stated	...	...	1	...	...	...	...	1	...	...	...	...	..	2	631
Coös	Males	20	17	20	16	27	19	24	24	20	19	20	18	.	244	
	Females	14	10	14	15	18	26	22	16	28	21	15	14	1	214	
	Not stated	1	1	..	...	...	...	1	...	...	1	...	...	..	4	462
Total for State.	Males	258	261	297	273	273	249	306	282	247	266	216	268	2	3188	
	Females	233	210	283	271	257	262	275	239	273	255	229	261	5	3053	
	Not stated	6	5	5	10	4	7	8	6	8	9	4	6	..	78	7319

TABLE 8.

MARRIAGES BY COUNTIES AND NATIVITY.

COUNTIES.	Both American.	Both foreign.	Husband American.	Wife American.	Not stated.	Total.
Rockingham	333	33	22	18	41	447
Strafford	278	53	16	13	28	388
Belknap	107	15	9	6	13	150
Carroll	157	2	4	1	18	182
Merrimack	275	25	15	22	24	361
Hillsborough	443	189	53	40	90	815
Cheshire	187	14	7	8	17	233
Sullivan	85	4	5	4	11	109
Grafton	249	12	18	20	28	327
Coös	104	21	9	22	12	168
Total	2,218	368	158	154	282	3,180

TABLE 9.

MARRIAGES BY AGES AND MONTHS, BY COUNTIES.

COUNTIES.	15 or under.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 70.	70 to 80.	Over 80.	Not stated.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Not stated.
Rockingham..Males	..	25	149	122	46	33	13	17	10	12	8	5		7	447	38	21	31	45	35	42	32	25	38	46	48	46	.
Females	2	107	162	78	37	20	8	8	13	1	3	..	..	8	447	....	....	....	....	..	....	....	....	....	....	....		.
Strafford......Males	..	25	134	91	49	24	14	13	7	6	6	6	..	13	388	24	26	16	33	33	33	21	37	33	38	51	43	..
Females	4	89	142	65	36	16	8	7	2	1	3	1	..	14	388	....	...	....	....	....	....	...	....	....	....	....	....	..
Belknap......Males	..	10	60	38	16	7	8	1	4	3	2	1	..	....	150	18	7	4	10	15	18	11	10	19	11	12	15	..
Females	1	30	60	31	7	6	5	2	2	2	2	..	..	2	150	....	....	....	....	....	....	...	....	...	....	....	....	..
Carroll........Males		10	55	55	14	15	6	8	7	2	3	1	..	6	182	18	14	13	12	11	13	11	11	19	15	20	22	3
Females	2	63	50	22	16	8	7	2	..	3	1	1	..	7	182	...	....	....	....	....	..	....	...	....	...	....	....	..
Merrimack....Males	..	16	115	105	35	30	16	10	11	3	8	8	..	4	361	26	26	13	33	28	19	22	25	37	35	47	49	1
Females	3	72	136	62	29	21	13	4	8	1	6	1	..	5	361	....	....	....	..	....	....	..	....	....	. .	....	....	..
Hillsborough..Males	..	41	302	192	81	37	20	24	19	17	13	7	..	62	815	68	59	45	68	53	79	56	69	61	90	93	73	1
Females	1	172	324	123	52	28	15	14	6	4	11	1	..	64	815	....	..	....	....	...	....	....	....	....	....	....	...	..
Cheshire......Males	..	9	79	70	31	8	11	10	5	3	6	..	1	....	233	16	16	10	26	17	19	10	14	27	18	22	32	6
Females	5	54	90	42	14	9	8	4	1	3	1	..	..	2	233	....	....	....	....	....	....	....	....	....	....	....	...	..
Sullivan ......Males	..	2	29	34	17	7	3	1	2	3	4	2	1	4	109	5	6	8	9	10	8	8	3	11	9	19	13	..
Females	1	29	37	15	8	1	4	2	2	3	1	1	..	5	109	....	....	....	....	....	....	...	....	....	...	....	....	..
Grafton.......Males	..	10	120	94	34	24	12	10	7	5	8	3	..	..	327	23	20	13	24	30	23	15	18	46	40	43	31	1
Females	2	110	109	47	16	18	10	6	3	2	2	..	..	2	327	....	....	..	...	....	....	....	....	....	....	....	....	..
Coös.........Males	..	8	60	49	20	9	5	9	..	1	3	3	..	1	168	18	6	9	14	12	15	14	10	20	18	19	11	2
Females	5	66	57	23	7	5	1	1	2	..	2	2	..	2	168	....	...	....	....	....		....	....	....	..	....	....	..
Total for State—																												
Males	..	156	1103	850	343	194	108	103	72	55	61	36	2	97	3180	254	201	162	274	244	269	200	222	311	320	374	335	14
Females	26	792	1167	508	222	132	79	50	34	20	32	7	..	111	3180	....	....	....	....	...	...	....	....	....	...	....	....	..

TABLE 10.

COUNTIES.	Instances in which the age of the bride exceeded that of the groom.	Widowers.	Widows.	Third marriage.		Fourth marriage.		Fifth marriage.	Oldest.		Youngest.		Oldest couple.		Youngest couple.	
				M	F	M	F	M	M	F	M	F	M	F	M	F
Rockingham	61	77	65	7	..	.	..	..	76	67	17	15	71	67	17	17
Strafford	37	66	51	6	..	1	1	..	75	63	18	14	75	55	18	14
Belknap	72	24	23	5	..	..	..	..	77	73	17	14	74	73	18	15
Carroll	21	33	21	7	5	..	..	..	78	75	19	15	78	75	19	16
Merrimack	53	83	59	8	3	..	1	..	75	72	16	14	71	72	18	14
Hillsborough	134	124	91	15	5	2	..	..	77	72	17	12	73	72	17	16
Cheshire	21	38	27	10	..	.	..	..	80	61	18	15	80	61	19	16
Sullivan	10	21	20	2	1	..	1	..	82	72	16	14	82	72	16	16
Grafton	33	66	42	5	8	..	1	..	73	60	18	16	69	60	19	16
Coös	17	21	20	4	2	..	..	1	77	75	18	13	69	75	18	15
Total for State	459	553	419	69	24	3	4	1	82	75	16	12	82	72	18	14

DIVORCES.

TABLE 11.

DIVORCES DECREED BY THE SUPREME COURT OF NEW HAMPSHIRE IN THE YEAR 1885, AS RETURNED BY THE CLERKS OF THE SEVERAL COUNTIES.

COUNTIES.	Causes of Divorce.								Libellants.		
	Abandonment.	Adultery.	Absent 3 years.	Conviction of crime and imprisonment.	Extreme cruelty.	Impotency.	Habitual drunkenness.	Treatment injurious to health.	Males.	Females.	Total of each county.
Rockingham	10	6	....	1	5	1	2	....	10	15	25
Strafford	4	8	4	......	7	1	4	....	4	24	28
Belknap	4	3	3	......	5	....	5	....	3	17	20
Carroll	6	4	....	......	7	....	3	....	10	10	20
Merrimack	3	9	12	......	6	....	5	....	12	23	35
Hillsborough	29	16	....	1	27	....	11	2	29	57	86
Cheshire	12	5	....	......	4	....	2	2	12	13	25
Sullivan	3	7	....	......	10	....	....	....	4	16	20
Grafton	10	2	....	......	10	....	....	....	7	15	22
Coös	2	2	....	......	4	....	2	...	3	7	10
Totals	83	62	19	2	85	2	34	4	94	197	291

The following table of divorces, by counties, since 1870, is given for the purpose of comparison, and as an interesting table of study to those who are interested in the statistics of divorces.

TABLE 12.

DIVORCES DECREED FROM 1870 TO 1885 INCLUSIVE, BY COUNTIES.

COUNTIES.	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885
Rockingham..	19	20	29	34	41	23	37	18	30	30	44	30	23	2	28	25
Strafford	12	6	24	27	25	17	20	29	29	34	58	42	36	53	32	28
Belknap.....	....	7	7	13	12	10	18	16	16	16	22	17	14	15	19	20
Carroll	4	1	1	9	9	4	10	13	19	13	11	19	9	7	14	20
Merrimack....	15	27	32	13	51	37	40	23	22	36	41	25	49	49	48	35
Hillsborough .	64	37	58	51	77	75	65	73	61	69	83	87	90	74	93	86
Cheshire......	12	19	19	16	15	22	21	17	18	22	31	21	34	25	30	25
Sullivan......	6	6	10	16	17	13	26	9	10	8	9	22	17	12	11	20
Grafton.......	13	21	15	29	22	20	20	29	17	27	25	37	27	14	28	22
Coös	4	5	2	4	12	11	9	10	11	10	15	7	15	3	12	10
Total.....	149	149	197	212	281	232	266	237	233	265	339	307	314	273	315	291

TABLE 13.

CAUSES OF DEATH, ARRANGED BY TOWNS AND COUNTIES.

Towns in Rockingham County.	CLASS I. — ZYMOTIC DISEASES.																																		
	Order 1. — Miasmatic.																				Order 2. — Enthetic.							Order 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro-spinal Meningitis.	Total.		Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total.		Alcoholism.	Privation and Neglect.	Total.		Male.	Female.	Sex not stated.	Total.
																			M	F						M	F			M	F				
Atkinson	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Auburn	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Brentwood	..	..	..	..	..	1	..	1	..	..	..	..	..	4	..	..	..	..	2	4	..	..	..	..	..	..	..	..	..	..	..	2	4	..	6
Candia	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Chester	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Danville	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Deerfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1	..	2	..	..	2
Derry	..	..	..	..	..	..	..	3	1	..	..	..	..	..	..	..	..	..	2	2	1	..	..	..	..	1	..	..	..	..	..	3	2	..	5
East Kingston	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Epping	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	1	1	1	..	..	..	1	1	1	..	..	..	..	2	2	..	4
Exeter	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Fremont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Greenland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Hampstead	..	..	1	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	1	2	1	..	..	..	..	..	1	..	..	..	..	1	3	..	4
Hampton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hampton Falls	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kensington	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2

Kingston						1													1													1			1
Londonderry																																			
Newcastle															1					1													1		1
Newington						1								1					2													2			2
Newmarket				9		3				1					3				10	6	1						1	1		1		11	7		18
Newton			1					1	1										3													3			3
North Hampton														1					1													1			1
Northwood				1															1													1			1
Nottingham																																			
Plaistow								2											1	1												1	1		2
Portsmouth			1	5		6	2	4	1					3	9		2	1	11	23								3		3		12	23	2	37
Raymond								2											1	1												1	1		2
Rye											1		1						1	1												1	1		2
Salem								1												1	1					1						1	1		2
Sandown																																			
Seabrook																																			
South Hampton													1	1				1	1	2												1	2		3
South Newmarket															2				1	1												1	1		2
Stratham																																			
Windham																																			

TABLE 13—*continued.*

TOWNS IN ROCKINGHAM COUNTY.	CLASS II.—CONSTITUTIONAL DISEASES.																CLASS III.—LOCAL DISEASES.																								
	ORDER 1.—Diathetic.							ORDER 2.—Tubercular.						Total for Cl. II.			ORDER 1.—Nervous System.												ORDERS 2 AND 3.												
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total. M	Total. F	Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total. M	Total. F	Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total. M	Total. F	Heart disease.	Aneurism.	Pericarditis.	Total. M	Total. F	Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total. M	Total. F
Atkinson	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	2	..	..	1	1	..	..	..	..	..	..	..	..
Auburn	..	..	..	..	.	..	..	..	..	4	..	2	2	2	2	4	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	1
Brentwood	..	..	..	..	..	..	..	..	..	6	..	4	2	4	2	6	1	4	..	1	..	..	1	2	..	..	6	3	6	..	..	3	3	..	1	5	..	..	..	3	3
Candia	..	..	2	.	..	1	1	..	..	4	..	1	3	2	4	6	2	..	..	..	..	..	..	3	..	..	4	1	2	..	..	1	1	..	1	2	1	..	..	1	3
Chester	..	..	1	..	..	1	..	..	..	3	..	..	3	1	3	4	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..		..	..	..	2	..	..	..	2	..
Danville	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	..	1	2	.	..	..	..	..	..	..	4	..	..	..	2	2
Deerfield	1	..	..	..	..	..	1	..	..	4	..	3	1	3	2	5	1	3	..	..	..	.	1	3	..	..	4	4	4	..	..	1	3	..	1	1	..	..	..	1	1
Derry	2	..	1	..	..	..	3	.	..	6	..	..	6	..	9	9	1	2	1	..	..	..	..	..	..	..	2	2	5	..	..	3	2	..	..	4	..	..	..	2	2
East Kingston	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	1	2	..	..	..	..	1	..	.	..	1	3	2	..	..	1	1	..	..	1	..	..	..	1	..
Epping	..	..	2	..	1	2	1	..	..	5	1	3	3	5	4	9	4	1	..	..	..	..	2	..	..	..	4	3	4	..	..	3	1	..	3	1	..	..	..	1	3
Exeter	1	..	2	..	..	..	3	..	..	7	..	2	5	2	8	10	2	5	..	..	..	2	2	3	..	..	2	12	6	.	..	4	2	..	..	..	..	..	..	..	..
Fremont	1	..	..	..	..	1	..	..	..	1	..	..	1	1	1	2	1	1	..	..	..	..	..	..	..	..	1	1	3	..	..	2	1	..	..	3	..	..	..	2	1
Greenland	2	..	2	..	..	1	3	..	..	2	..	..	2	1	5	6	..	1	..	..	..	..	..	..	..	..	..	1	.	..	..	..	..	..	..	..	..	..	..	..	..
Hampstead	1	..	..	..	..	1	..	..	..	2	..	1	1	2	1	3	.	1	..	..	..	..	..	..	..	..	1	..	2	..	..	1	1	..	..	1	.	.	..	1	..
Hampton	..	..	..	..	..	..	..	..	..	3	..	2	1	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	..	..	..	1	..	..	..	1	..
Hampton Falls	..	..	..	..	..	..	..	..	..	2	..	1	1	1	1	2	..	..	..	..	..	..	1	1	..	..	2	..	.	.	..	..	..	..	..	..	..	..	..	..	..
Kensington	..	..	1	..	..	1	..	1	..	1	..	2	..	3	..	3	..	1	..	..	1	..	..	1	..	..	2	1	3	..	..	3	..	..	..	1	..	..	..	1	..
Kingston	..	1	..	1	..	1	1	..	..	2	..	1	1	2	2	4	..	3	..	..	..	..	..	..	..	..	1	2	2	..	..	1	1	..	..	2	1	..	1	2	2
Londonderry	..	..	2	..	1	2	1	..	..	5	..	2	3	4	4	8	1	1	..	..	..	..	..	..	..	..	..	2	5	..	..	2	3	..	..	1	..	..	..	..	1
Newcastle	..	..	2	..	..	2	..	..	..	1	..	..	1	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..

Newington	..	..	2	..	..	..	2	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	1	..	..	..	..	..	..	..	..
Newmarket	1	..	2	..	..	1	2	.	..	9	..	3	6	4	8	12	..	1	..	..	..	.	1	1	..	..	3	..	6	..	..	2	4	..	1	3	..	1	1	3	3
Newton	..	..	..	..	..	..	..	..	..	3	..	2	1	2	1	3	1	1	..	..	..	..	1	..	..	..	..	3	2	..	..	2	..	..	1	2	..	..	..	..	3
North Hampton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	2	1	..	..	..	..	..	..	..	1	..	..	..	..	1
Northwood	..	..	1	..	..	..	1	..	..	3	..	2	1	2	2	4	2	3	..	..	..	1	1	..	..	..	7	..	1	..	..	..	1	..	..	3	..	..	..	1	2
Nottingham	..	..	..	..	..	..	..	..	..	7	..	2	5	2	5	7	2	..	..	..	..	..	..	..	1	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Plaistow	..	..	1	..	..	..	1	..	..	1	..	.	1	..	2	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	1
Portsmouth	..	1	9	..	2	4	8	..	..	29	2	15	16	19	24	43	16	8	1	1	..	3	3	7	2	1	15	27	8	1	..	5	4	..	7	15	..	..	..	11	11
Raymond	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	2	..	..	..	..	..	1	..	..	1	2	1	..	..	1	..	..	..	1	..	..	..	..	1
Rye	1	..	2	..	..	1	2	..	..	2	..	..	2	1	4	5	1	..	..	1	..	..	..	1	..	..	1	2	3	..	..	1	2	..	1	1	..	..	..	1	1
Salem	..	..	..	..	..	..	..	..	..	7	..	4	3	4	3	7	2	3	..	..	..	..	..	..	..	..	2	3	1	..	..	1	..	..	1	..	..	..	..	..	1
Sandown	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..
Seabrook	2	..	..	..	..	1	1	..	..	3	..	2	1	3	2	5	..	3	..	..	..	2	2	..	..	..	3	4	4	..	..	1	3	..	..	2	..	..	..	..	2
South Hampton	..	..	1	..	..	..	1	..	..	2	..	1	1	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Newmarket	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..
Stratham	..	..	..	..	..	..	..	1	.	1	..	2	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	1	1
Windham	..	..	..	..	..	..	..	..	..	5	..	2	3	2	3	5	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	1	4	..	..	1	..	..	..	..	1

TABLE 13 — *continued.*

CLASS III. — LOCAL DISEASES — *continued.*

Towns in Rockingham County.	Order 4. — Digestive Organs.																	Order 5. — Urinary Organs.										Order 6. — Generative Organs.					Order 8. — Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total. M	Total. F	Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total. M	Total. F	Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total. M	Total. F	Males.	Females.	Sex not stated.	Total.
Atkinson	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3
Auburn	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	4
Brentwood	..	..	..	..	..	1	..	..	..	1	..	..	..	1	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	13	13	..	26
Candia	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	9	5	..	14
Chester	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	4	1	..	5
Danville	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	5	..	8
Deerfield	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	8	9	..	17
Derry	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	1	1	10	8	..	18
East Kingston	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	4	..	7
Epping	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	10	7	..	17
Exeter	..	2	..	..	1	..	..	..	..	..	..	1	1	..	..	4	1	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	11	15	..	26
Fremont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	3	..	8
Greenland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Hampstead	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	..	5
Hampton	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..	1	..	4	2	..	6
Hampton Falls	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
Kensington	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	1	..	7
Kingston	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	5	6	..	11
Londonderry	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	7	..	9
Newcastle	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2

Newington	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Newmarket	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	2	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	..	..	1	1	11	10	..	21
Newton	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	7	..	9
North Hampton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	2	3	..	5
Northwood	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	1	..	..	1	..	1	..	..	..	..	..	..	..	9	5	..	14
Nottingham	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	4
Plaistow	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	2	..	3
Portsmouth	3	..	4	..	1	1	..	1	..	1	..	1	1	3	..	7	9	1	3	1	..	1	1	..	..	4	3	..	..	..	..	..	1	1	..	1	..	2	1	44	55	..	99
Raymond	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	..	5
Rye	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	6	..	9
Salem	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	5	..	8
Sandown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Seabrook	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	5	10	..	15
South Hampton	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
South Newmarket	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Stratham	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Windham	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	5	..	6

TABLE 13—*continued.*

Towns in Rockingham County.	CLASS IV.—DEVELOPMENTAL DISEASES.																CLASS V.—VIOLENT DEATHS.																			Grand Total for All Classes.			
	Order 1.—Of Children.								Orders 2, 3, and 4.								Order 1.—Accident and Negligence.										Orders 3, 4, and 5.												
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total.		Childbirth.	Old age.		Atrophy and debility.		Total for Class IV.			Railroad accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total.		Suicide.		Violent, not classed.		Cause not reported.		Total for Class V.			Males.	Females.	Not stated.	Total.
							M	F		M	F	M	F	Male.	Female.	Total.									M	F	M	F	M	F	M	F	Male.	Female.	Total.				
Atkinson	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	3	2	..	5
Auburn	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	6	..	8
Brentwood	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	19	20	..	39
Candia	3	1	..	..	..	..	1	3	..	1	..	..	..	2	3	5	1	1	..	..	..	..	..	..	1	1	..	..	..	..	..	1	1	2	3	14	16	..	30
Chester	..	..	..	..	..	..	..	..	..	1	5	..	..	1	5	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	2	7	10	..	17
Danville	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	3	7	..	10
Deerfield	..	..	..	..	..	..	..	..	..	3	1	..	..	3	1	4	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	2	1	2	3	17	14	..	31
Derry	..	..	..	..	..	..	..	..	1	2	3	..	..	2	4	6	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	5	1	5	6	16	28	..	44
East Kingston	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	3	6	..	9
Epping	..	..	..	..	1	..	1	..	1	2	..	2	2	5	3	8	..	1	..	1	..	..	..	..	1	1	..	..	..	..	..	..	1	1	2	23	17	..	40
Exeter	..	..	..	..	..	..	..	..	1	1	9	..	..	1	10	11	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	1	15	35	..	50
Fremont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	6	4	..	10
Greenland	1	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	2	..	2	4	7	..	11
Hampstead	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	2	9	5	1	15
Hampton	1	1	..	..	..	..	2	..	..	2	3	..	..	4	3	7	..	..	..	..	..	..	..	1	1	..	..	1	..	..	1	..	2	1	3	12	7	..	19
Hampton Falls	1	..	..	..	..	..	1	..	..	..	1	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	3	3	1	7
Kensington	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	10	3	..	13
Kingston	..	..	..	..	..	..	..	..	..	..	1	1	..	1	1	2	1	1	..	..	1	..	..	..	2	1	..	..	..	..	..	..	2	1	3	11	10	..	21
Londonderry	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	7	13	..	20

Newcastle	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	1	5	2	..	7
Newington	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	5	4	..	9
Newmarket	2	..	..	..	..	..	1	1	..	..	3	1	..	2	4	6	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	1	1	2	29	30	..	59
Newton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	8	..	15
North Hampton	..	..	..	..	..	..	..	..	..	2	1	..	..	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	2	5	5	1	11
Northwood	1	..	..	..	1	..	1	1	..	..	1	..	..	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	13	10	..	23
Nottingham	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	2	1	1	..	..	..	..	..	..	1	1	2	4	10	..	14
Plaistow	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	7	..	9
Portsmouth	1	..	..	..	..	..	1	..	1	4	12	4	6	9	19	28	1	..	..	..	1	1	..	3	6	..	..	..	..	..	11	14	17	14	31	101	135	2	238
Raymond	2	..	..	..	..	..	..	2	..	1	1	1	..	2	3	5	..	..	..	1	..	..	..	..	..	1	..	..	..	..	1	1	1	2	3	7	9	..	16
Rye	1	2	..	..	..	..	1	2	..	..	..	..	..	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	13	..	19
Salem	1	..	..	..	..	..	1	..	..	..	1	1	1	2	2	4	..	1	..	..	..	..	..	2	2	1	..	..	..	..	1	1	3	2	5	13	13	..	26
Sandown	..	..	..	..	..	..	..	..	..	..	3	..	..	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	3	5	..	8
Seabrook	..	..	..	..	1	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	12	..	21
South Hampton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	3	5	..	8
South Newmarket	1	..	..	..	..	..	1	..	..	3	1	..	..	4	1	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	3	..	9
Stratham	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	4	2	..	6
Windham	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	4	10	..	14

TABLE 13 — *continued.*

Towns in Strafford County.	CLASS I. — ZYMOTIC DISEASES.																																	
	Order 1. — Miasmatic.																			Order 2. — Enthetic.							Order 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro-spinal Meningitis.	Total.		Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total.		Alcoholism.	Privation and Neglect.	Total.		Male.	Female.	Sex not stated.	Total.
																			M	F						M	F			M	F				
Barrington	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Dover	..	2	1	2	..	4	2	7	1	1	..	..	1	1	15	..	2	....	15	24	1	..	..	..	..	..	1	3	..	2	1	17	26	..	43
Durham	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Farmington	..	..	1	1	..	..	..	1	..	..	..	..	..	..	1	..	..	....	2	2	1	..	..	..	..	..	1	2	..	2	..	4	3	..	7
Lee	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madbury	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Middleton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Milton	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
New Durham	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rochester	..	..	2	1	..	..	..	1	..	..	..	..	1	3	2	..	..	....	5	5	..	..	..	..	..	..	..	..	1	..	1	5	6	..	11
Rollinsford	..	..	..	1	..	..	..	..	..	..	..	..	..	..	4	..	..	....	4	1	..	..	..	..	..	..	..	..	..	..	..	4	1	.	5
Somersworth	..	..	1	..	..	10	1	2	..	..	..	..	3	1	7	..	..	....	13	12	1	..	..	..	..	1	..	..	..	..	..	14	12	..	26
Strafford	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Towns in Strafford County.	CLASS II. — CONSTITUTIONAL DISEASES.																CLASS III. — LOCAL DISEASES.																								
	Order 1. — Diathetic.							Order 2. — Tubercular.						Total for Cl. II.			Order 1. — Nervous System.												Orders 2 and 3.												
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total. M	Total. F	Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total. M	Total. F	Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total. M	Total. F	Heart disease.	Aneurism.	Pericarditis.	Total. M	Total. F	Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total. M	Total. F
Barrington	..	..	1	..	..	1	..	.	.	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	1	..	1	1	2	..	.	1	1	..	2	2	..	..	..	1	3
Dover	7	1	8	..	1	6	11	2	..	49	1	19	33	25	44	69	16	10	3	2	..	3	11	5	1	..	26	25	21	..	..	7	14	2	5	17	1	1	..	18	8
Durham	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	..	..	..	..	1
Farmington	..	..	3	..	..	..	3	2	..	12	..	6	8	6	11	17	3	..	..	1	..	..	1	..	1	..	3	3	3	..	..	1	2	..	2	9	..	..	..	3	8
Lee	1	..	1	..	1	1	2	..	..	1	..	1	..	2	2	4	..	..	..	..	.	..	..	1	..	..	..	1	3	..	..	2	1	..	..	..	..	..	..	..	..
Madbury	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	..	..	..	..	..	..	1
Middleton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Milton	..	..	..	..	..	..	..	..	..	2	..	2	..	2	..	2	..	..	..	..	..	..	..	1	..	..	1	..	2	..	..	2	..	..	..	1	..	..	..	1	..
New Durham	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2		.	1	1	..	..	1	..	..	1	1	1
Rochester	2	..	3	..	..	1	4	..	..	10	..	4	6	5	10	15	..	1	..	.	.	..	1	..	..	..	1	1	3	..	..	..	3	..	2	7	..	..	..	3	6
Rollinsford	..	..	..	..	..	..	..	..	..	3	2	2	3	2	3	5	..	1	..	1	..	..	..	1	..	..	1	2	1	..	..	..	1	..	3	2	..	..	..	3	2
Somersworth	..	..	1	..	1	2	..	..	..	14	..	5	9	7	9	16	4	5	..	..	..	1	5	..	..	..	7	8	6	..	..	3	3	..	2	6	..	..	..	4	4
Strafford	..	..	1	..	..	..	1	..	..	3	..	1	2	1	3	4	..	1	..	..	..	2	1	..	..	..	2	2	..	..	..	..	..	..	..	2	..	..	..	1	1

TABLE 13—*continued.*

Towns in Strafford County.	CLASS III.—LOCAL DISEASES—*continued.*																																										
	Order 4.—Digestive Organs.																	Order 5.—Urinary Organs.										Order 6.—Generative Organs.					Order 8.—Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total.		Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total.		Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total.		Male.	Female.	Sex not stated.	Total.
																M	F									M	F											M	F				
Barrington	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	3	5	..	8
Dover	1	4	2	..	..	1	..	..	..	..	..	..	1	3	..	5	7	4	6	..	1	1	2	2	..	10	6	..	..	..	..	.	1	..	2	..	..	2	1	66	61	2	129
Durham	..	1	..		..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3
Farmington	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	14	..	23
Lee	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	4
Madbury	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	4
Middleton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	.	..	..	..	..	..	..	..	..	..	1	..	1
Milton	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	5	1	..	6
New Durham	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	..	5
Rochester	..	1	..	..	1	..	..	..	..	..	..	..	..	..	1	2	1	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	7	11	..	18
Rollinsford	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	4	7	..	11
Somersworth	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	1	..	1	1	..	..	..	1	2	..	..	..	1	1	..	..	..	..	..	..	..	16	19		35
Strafford	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	4	4	..	8

Towns in Strafford County.	Class IV. — Developmental Diseases.																Class V. — Violent Deaths.																			Grand Total for all Classes.			
	Order 1. — Of Children.								Orders 2, 3, and 4.								Order 1. — Accident and Negligence.										Orders 3, 4, and 5.												
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total.		Childbirth.	Old Age.		Atrophy and Debility.		Total for Class IV. Male.	Total for Class IV. Female.	Total for Class IV. Total.	Railroad Accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total.		Suicide.		Violent, not classed.		Cause not reported.		Total for Class V. Male.	Total for Class V. Female.	Total for Class V. Total.	Males.	Females.	Not stated.	Total.
							M	F		M	F	M	F												M	F	M	F	M	F	M	F							
Barrington	2	..	..		..	..	1	1	..	2	..	1	..	4	1	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	10	7	..	17
Dover	8	2	..	..	1	..	3	8	1	7	8	8	2	18	19	37	..	..	..	2	1	1	3	2	4	5	..	..	..	..	6	10	10	15	25	133	165	5	303
Durham	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	5	..	6
Farmington	2	..	1	..	..	..	..	3	..	1	1	2	1	3	5	8	..	..	1	..	..	..	1	1	2	1	..	..	..	..	3	1	5	2	7	26	35	1	62
Lee	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	4	6	..	10
Madbury	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	3	3	..	6
Middleton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....	1	..	1
Milton	..	1	..	..	..	..	..	1	1	1	2	..	1	1	5	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	8	8	..	16
New Durham	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	1	1	2	..	..	..	..	..	1	..	3	..	3	5	5	..	10
Rochester	1	2	..	..	..	..	2	1	..	2	2	..	1	4	4	8	1	..	..	1	..	..	..	..	2	..	1	..	..	..	2	..	5	..	5	24	31	2	57
Rollinsford	..	..	2	..	..	..	..	2	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	11	13	..	24
Somersworth	3	..	..	..	..	1	2	2	..	..	1	1	2	3	5	8	..	1	..	..	..	..	..	1	2	..	..	..	..	..	3	2	5	2	7	45	47	..	92
Strafford	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	6	9	..	15

TABLE 13 — *continued.*

Towns in Belknap County.	CLASS I. — ZYMOTIC DISEASES.																																		
	Order 1. — Miasmatic.																				Order 2. — Enthetic.							Order 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro-spinal Meningitis.	Total.		Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total.		Alcoholism.	Privation and Neglect.	Total.		Male.	Female.	Sex not stated.	Total.
																			M	F						M	F			M	F				
Alton	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Barnstead	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Belmont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Center Harbor	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Gilford	..	..	2	1	..	1	..	2	..	..	..	..	..	..	..	..	1	..	4	3	..	..	..	..	..	..	..	..	..	..	..	4	3	..	7
Gilmanton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..	1
Laconia	..	..	..	1	..	7	..	..	..	..	..	..	..	..	3	..	..	..	7	4	..	..	..	..	..	..	..	..	..	..	..	7	4	..	11
Meredith	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
New Hampton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	1	..	1
Sanbornton	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Tilton	..	..	..	..	..	..	..	5	..	..	..	..	..	2	..	..	..	..	2	5	..	..	..	..	..	..	..	..	..	..	..	2	5	..	7

Towns in Belknap County.	CLASS II. — CONSTITUTIONAL DISEASES.																CLASS III. — LOCAL DISEASES.																								
	Order 1. — Diathetic.							Order 2. — Tubercular.						Total for Cl. II.			Order 1. — Nervous System.												Orders 2 and 3.												
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total.		Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total.		Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total.		Heart disease.	Aneurism.	Pericarditis.	Total.		Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total.	
						M	F					M	F														M	F				M	F							M	F
Alton	..	..	..	..	..	..	..	1	..	2	..	2	1	2	1	3	..	1	..	..	..	..	..	..	..	..	..	1	4	..	..	4	..	..	..	3	..	.	..	2	1
Barnstead	1	..	..	..	..	1	..	..	..	2	.	1	1	2	1	3	1	2	..	..	..	.	..	..	..	..	3	..	3	..	..	2	1	..	..	2	..	..	..	2	..
Belmont	1	..	1	..	..	1	1	..	..	11	..	6	5	7	6	13	..	2	..	..	..	..	..	..	..	..	1	1	1	..	..	..	1	..	..	1	..	..	..	..	1
Center Harbor	..	..	1	..	..	..	1	..	..	1	1	2	..	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	.	1	..	..	..	..	..	..	..	..
Gilford	1	..	2	..	..	..	3	..	..	6	..	4	2	4	5	9	4	3	..	..	..	..	3	..	..	..	5	5	4	..	..	2	2	..	..	3	..	..	..	1	2
Gilmanton	1	..	2	..	1	3	1	..	..	6	..	4	2	7	3	10	1	1	..	..	..	..	..	..	..	..	..	2	2	..	..	1	1	..	..	1	..	..	..	..	1
Laconia	3	..	2	..	..	1	4	..	..	15		5	10	6	14	20	1	2	..	1	..	..	4	3	..	..	4	7	3	.	..	2	1	..	..	7	..	..	..	1	6
Meredith	..	..	3	..	..	2	1	..	..	2	..	1	1	3	2	5	1	3	..	..	..	1	..	..	..	..	3	2	2	..	..	2	..	..	..	4	..	..	..	1	3
New Hampton	1	..	1	..	..	..	2	..	..	..	..	..	..	.	2	2	..	3	..	..	..	..	..	..	..	..	1	2	1	..	..	1	..	..	..	1	..	..	..	1	..
Sanbornton	1	..	1	..	..	1	1	.	..	4	..	1	3	2	4	6	1	..	..	..	..	..	1	..	..	..	2	..	3	..	..	2	1	..	..	1	..	..	..	..	1
Tilton	..	1	1	..	..	1	1	..	.	1	..	..	1	1	2	3	1	..	..	..	..	..	2	..	..	..	..	3	..	..	..	..	..	..	..	1	..	..	..	..	1

TABLE 13—*continued.*

Towns in Belknap County.	CLASS III.—LOCAL DISEASES—*continued.* Order 4.—Digestive Organs.																	Order 5.—Urinary Organs.										Order 6.—Generative Organs.					Order 8.—Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total. M	Total. F	Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total. M	Total. F	Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total. M	Total. F	Male.	Female.	Sex not stated.	Total.
Alton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	6	3	..	9
Barnstead	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	1	..	8
Belmont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	3	4	..	7
Center Harbor	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Gilford	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	1	..	9	12	..	21
Gilmanton	..	1	2	..	..	..	..	..	..	..	..	1	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	5	6	..	11
Laconia	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	2	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	10	16	..	26
Meredith	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	6	7	..	13
New Hampton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	5
Sanbornton	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	6	3	..	9
Tilton	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	7

Towns in Belknap County.	Class IV. — Developmental Diseases.																Class V. — Violent Deaths.																			Grand Total for All Classes.			
	Order 1. — Of Children.								Orders 2, 3, and 4.								Order 1. — Accident and Negligence.										Orders 3, 4, and 5.													
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total. M	Total. F	Childbirth.	Old Age. M	Old Age. F	Atrophy and Debility. M	Atrophy and Debility. F	Total for Class IV. Male.	Total for Class IV. Female.	Total for Class IV. Total.	Railroad Accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total. M	Total. F	Suicide. M	Suicide. F	Violent, not classed. M	Violent, not classed. F	Cause not reported. M	Cause not reported. F	Total for Class V. Male.	Total for Class V. Female.	Total for Class V. Total.	Males.	Females.	Not stated.	Total.
Alton	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	2	9	8	..	17
Barnstead	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	9	2	..	11
Belmont	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	2	..	1	..	..	1	2	..	..	..	..	..	2	1	4	5	12	15	..	27
Center Harbor	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	3	..	5
Gilford	1	2	..	..	..	..	1	2	..	1	2	..	1	2	5	7	1	1	..	..	..	1	..	..	2	1	..	..	..	..	1	..	3	1	4	22	26	..	48
Gilmanton	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	2	..	1	..	..	..	..	..	..	..	1	..	..	..	..	1	1	1	2	3	15	12	..	27
Laconia	2	5	..	..	..	..	7	..	..	4	2	..	..	11	2	13	..	..	..	..	..	3	..	..	3	..	..	..	..	..	1	4	4	4	8	36	40	2	78
Meredith	..	..	..	..	..	..	..	..	..	2	..	1	1	3	1	4	..	..	..	..	..	..	..	2	1	1	..	..	..	..	1	..	2	1	3	14	12	..	26
New Hampton	..	..	..	..	..	..	..	..	..	1	2	..	..	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	4	7	..	11
Sanbornton	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	1	1	2	10	9	..	19
Tilton	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	2	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	4	16	..	20

TABLE 13 — *continued.*

Towns in Carroll County.	CLASS I. — ZYMOTIC DISEASES.																																	
	Order 1. — Miasmatic.																			Order 2. — Enthetic.							Order 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro-spinal Meningitis.	Total. M	Total. F	Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total. M	Total. F	Alcoholism.	Privation and Neglect.	Total. M	Total. F	Male.	Female.	Sex not stated.	Total.
Albany	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bartlett	..	..	..	..	..	..	..	5	..	..	..	..	..	..	1	..	..	..	4	2	..	..	..	..	..	..	..	..	..	..	..	4	2	..	6
Brookfield	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Chatham	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Conway	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Eaton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Effingham	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Freedom	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hart's Location	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Jackson	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madison	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Moultonborough	..	..	..	2	..	..	..	1	..	..	..	..	..	..	2	..	..	..	3	2	..	..	..	..	..	..	..	..	..	..	..	3	2	..	5
Ossipee	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Sandwich	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	1	..	..	..	..	1	2	..	3
Tamworth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuftonborough	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..	1
Wakefield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wolfeborough	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Towns in Carroll County.	CLASS II. — CONSTITUTIONAL DISEASES.																CLASS III. — LOCAL DISEASES.																									
	Order 1. — Diathetic.							Order 2. — Tubercular.						Total for Cl. II.			Order 1. — Nervous System.												Orders 2 and 3.												
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total.		Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total.		Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total.		Heart disease.	Aneurism.	Pericarditis.	Total.		Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total.	
						M	F					M	F														M	F				M	F							M	F
Albany	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	1
Bartlett	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	..	..	..	..	2	..	..	..	..	..	..	1	2	..	..	..	..	3
Brookfield	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Chatham	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	2	..	..	..	2	..
Conway	1	..	2	..	..	..	3	..	2	4	..	2	4	2	7	9	1	2	..	1	..	..	3	..	..	..	4	3	1	..	..	1	..	..	..	6	..	..	..	3	3
Eaton	1	..	..	..	..	..	1	..	..	2	..	1	1	1	2	3	..	..	..	..	..	1	..	1	..	..	1	1	..	..	..	..	..	..	..	1	..	..	..	..	1
Effingham	..	..	..	..	1	1	..	..	..	2	..	2	..	3	..	3	..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..	1	..	1	1	..	..	..	..	2
Freedom	1	..	1	..	..	..	2	..	..	2	..	1	1	1	3	4	1	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	..	..	1	..
Hart's Location	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Jackson	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madison	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	1	..	..	..	2	..	..	2	1	4	..	..	3	1	..	..	..	..	..	1	1	..
Moultonborough	..	..	1	..	..	1	..	..	..	6	..	3	3	4	3	7	..	4	..	..	..	1	..	2	..	..	3	4	1	..	..	1	..	..	..	1	..	..	..	..	1
Ossipee	..	..	2	..	..	1	1	..	..	4	..	3	1	4	2	6	1	..	..	3	..	1	1	2	..	..	6	2	2	..	..	1	1	..	1	1	..	..	..	..	2
Sandwich	1	..	..	..	1	1	1	..	..	1	1	1	1	2	2	4	2	..	..	..	..	..	..	2	..	..	1	3	3	..	..	2	1	..	..	1	..	..	1	2	..
Tamworth	..	..	2	..	..	1	1	..	..	1	..	..	1	1	2	3	1	3	..	..	..	..	..	1	..	..	2	3	2	..	..	1	1	..	..	..	..	..	..	..	..
Tuftonborough	1	..	1	..	1	1	2	..	..	..	..	..	..	1	2	3	..	..	..	..	..	..	1	..	1	..	2	..	1	..	..	1	..	..	..	3	..	..	..	3	..
Wakefield	..	..	..	..	..	..	..	..	..	2	..	1	1	1	1	2	..	1	..	..	..	..	..	1	..	..	2	..	1	..	..	..	1	..	..	3	..	..	..	1	2
Wolfeborough	1	1	1	..	1	2	2	..	..	6	..	1	5	3	7	10	1	1	..	..	..	..	1	3	1	..	5	2	4	..	..	2	2	..	..	4	..	..	..	4	..

TABLE 13 — *continued.*

Towns in Carroll County.	CLASS III. — LOCAL DISEASES — *continued.*																																										
	Order 4. — Digestive Organs.																	Order 5. — Urinary Organs.										Order 6.— Generative Organs.					Order 8. — Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total. M	Total. F	Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total. M	Total. F	Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total. M	Total. F	Males.	Females.	Sex not stated.	Total.
Albany	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	4
Bartlett	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	5	..	6
Brookfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Chatham	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	3
Conway	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	10	8	..	18
Eaton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3
Effingham	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	6
Freedom	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Hart's Location	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Jackson	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Madison	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	2	..	8
Moultonborough	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	3	..	..	3	1	..	..	..	..	..	..	..	..	..	..	..	..	7	6	..	13
Ossipee	..	..	1	..	..	..	..	1	..	..	..	..	..	1	..	2	1	..	1	2	..	..	1	..	..	2	2	..	..	1	..	1	..	..	..	..	..	..	..	11	9	..	20
Sandwich	..	1	..	..	..	..	..	..	..	2	..	..	..	1	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	2	9	6	..	15
Tamworth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	4	..	7
Tuftonborough	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	8	1	..	9
Wakefield	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	5	4	..	9
Wolfeborough	..	..	..	..	..	..	..	..	..	1	..	..	1	2	..	2	2	..	1	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	..	13	8	..	21

Towns in Carroll County.	CLASS IV. — DEVELOPMENTAL DISEASES.																CLASS V. — VIOLENT DEATHS.																			Grand Total for All Classes.			
	Order 1. — Of Children.								Orders 2, 3, and 4.								Order 1. — Accident and Negligence.										Orders 3, 4, and 5.													
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total.		Childbirth.	Old Age.		Atrophy and Debility.		Total for Class IV.			Railroad Accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total.		Suicide.		Violent, not classed.		Cause not reported.		Total for Class V.			Males.	Females.	Not stated.	Total.
							M	F		M	F	M	F	Male.	Female.	Total.									M	F	M	F	M	F	M	F	Male.	Female.	Total.				
Albany																																				1	3		4
Bartlett									1						1	1																				5	9		14
Brookfield										1				1		1	1								1								1		1	3	2		5
Chatham										1				1		1																				4			4
Conway									1	1				1	1	2								1	1								1		1	16	17		33
Eaton											1				1	1																				2	5		7
Effingham												1		1		1																3		3	3	4	11		15
Freedom											1				1	1																				3	5		8
Hart's Location																																							
Jackson																																				1	1		2
Madison																																				7	3		10
Moultonborough											1				1	1					1					1								1	1	14	13		27
Ossipee		1					1				1			1	1	2				1						1	1				1		2	1	3	18	14		32
Sandwich											1		1		2	2																				12	12		24
Tamworth										1				1		1								1	1						1	1	2	1	3	7	7		14
Tuftonborough					1		1						1	1	1	2		1								1						1		2	2	11	6		17
Wakefield		2					1	1	1					1	2	3								1	1								1		1	8	7		15
Wolfeborough										2	4			2	4	6																1		1	1	18	20		38

TABLE 13 — *continued.*

Towns in Merrimack County.	CLASS I. — ZYMOTIC DISEASES.																																	
	Order 1. — Miasmatic.																			Order 2. — Enthetic.							Order 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro spinal Meningitis.	Total.		Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total.		Alcoholism.	Privation and Neglect.	Total.		Male.	Female.	Sex not stated.	Total.
																			M	F						M	F			M	F				
Allenstown	..	..	..	..	..	2	..	..	..	1	..	..	..	1	..	..	..	....	2	2	..	..	..	..	..	..	..	..	..	..	..	2	2	..	4
Andover	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	....	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
Boscawen	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	1	....	3	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	3
Bow	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Bradford	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	1	..	..	..	..	..	1	..	..	..	..	..	1	..	1
Canterbury	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	1	..	..	..	..	1	..	..	..	..	..	1	..	..	1
Chichester	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Concord	..	..	2	2	..	5	..	4	1	2	..	..	2	2	5	..	1	....	10	16	3	..	..	..	..	2	1	..	..	..		12	17	..	29
Danbury	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Dunbarton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.. 1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Epsom	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Franklin	..	..	2	1	..	2	..	3	1	..	..	..	..	..	..	..	..	...	4	5	2	..	..	..	..	..	2	..	..	..	..	4	7	..	11
Henniker	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..		.. 1	1	1	1	..	..	..	..	..	1	..	..	..	..	1	2	..	3
Hill	..	..	..	..	..		..	1	..	..	..	..	..	..	..	..	..	.. .	..	1	..	..	..		..	..	..	..	..	..	..	..	1	..	1
Hooksett	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	....	1	1	..	..	..	..	..		..	..	..	..	..	1	1	..	2
Hopkinton	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	....	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
Loudon	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Newbury	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
New London	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Northfield	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1

Pembroke	..	..	..	..	..	2	..	1	..	..	..	..	..	..	4	..	..	..	..	3	4	..	..	..	..	..	..	..	1	..	1	..	4	4	..	8
Pittsfield	..	1	..	1	..	..	..	..	..	1	..	..	..	1	1	..	..	..	1	3	3	..	..	..	..	..	..	..	..	..	..	..	3	3	..	6
Salisbury	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sutton	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	..	..	..	..	1	..	..	..	..	..	1	1	..	2
Warner	..	..	..	..	..	1	..	..	1	..	..	..	..	..	1	..	..	..	1	1	3	..	..	..	..	..	..	..	..	..	..	..	1	3	..	4
Webster	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wilmot	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1

TABLE 13—*continued.*

TOWNS IN MERRIMACK COUNTY.	CLASS II. — CONSTITUTIONAL DISEASES.																CLASS III. — LOCAL DISEASES.																								
	ORDER 1. — Diathetic.							ORDER 2. — Tubercular.						Total for Cl. II.			ORDER 1. — Nervous System.												ORDERS 2 AND 3.												
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total.		Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total.		Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total.		Heart disease.	Aneurism.	Pericarditis.	Total.		Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total.	
						M	F					M	F														M	F				M	F							M	F
Allenstown	..	..	..	..	..	..	..	..	..	3	..	..	3	.	3	3	..	..	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	..	..	..	.	..	..	..	..
Andover	1	4	..	..	..	2	3	..	..	2	..	1	1	3	4	7	2	2	..	..	..	..	..	..	..	..	3	1	2	.	..	2	..	..	..	1	..	..	..	..	1
Boscawen	..	..	..	..	..	..	..	..	..	2	..	1	1	1	1	2	2	1	2	..	..	..	..	..	..	..	3	2	4	..	..	2	2	..	..	1	1	..	..	2	..
Bow	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	1	1	1	..	..	..	..	..	..	..	..	.	2	..	..	..	..	..	..	1	1	..	..	..	1	1
Bradford	1	..	..	..	..	1	..	..	..	1	..	..	1	1	1	2	1	2	..	..	..	..	..	..	..	..	..	3	2		..	..	2	..	..	..	..	..	..	..	..
Canterbury	1	..	..	..	..	..	1	..	..	2	..	..	2	..	3	3	..	2	..	..	..	..	1	..	..	..	1	2	1	..	.	1	..	..	..	10		..	..	5	5
Chichester	..	..	..	..	..	..	..	..	..	2	1	1	2	1	2	3	..	..	..	..	..	..	..	..	..	.	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..
Concord	1	..	8	1	3	6	7	..	..	28	1	17	12	23	19	42	8	17	10	1	..	5	8	12	..	..	33	28	19	..	..	12	7	1	3	21	..	..	..	13	12
Danbury	..	..	..	..	..	..	..	..	..	2	..	2	..	2	..	2	1	..	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Dunbarton	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	.	1	..	..	..	1	..	..	..	..	1
Epsom	..	..	..	..	..	..	..	..	..	3	..	2	1	2	1	3	..	1	..	..	..	..	..	1	..	..	1	1	1	..	..	1	..	..	..	.	..	..	..	..	..
Franklin	1	2	1	..	..	..	4	..	..	2	..	2	..	2	4	6	1	4	..	..	..	2	..	1	..	..	3	5	6	..	..	5	1	1	2	5	..	2	1	3	8
Henniker	1	..	3	..	..	1	3	1	..	6	..	2	5	3	8	11	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	..	..	..
Hill	..	..	1	..	..	..	1	..	..	..	1	..	1	..	2	2	1	..	..	..	..	..	..	..	..	..	..	1	2	..	..	1	1	..		..	..	..	..	..	..
Hooksett	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	1	2	..	..	1	1	..	2	3	..	..	..	3	2
Hopkinton	1	1	2	..	..	4	..	..	..	9	..	3	6	7	6	13	1	2	..	..	..	..	..	..	..	..	2	1	4	..	..	2	2	..	2	3	..	..	..	2	3
Loudon	1	..	1	..	..	..	2	..	..	3	..	1	2	1	4	5	..	4	..	..	..	1	..	..	..	..	1	4	2	..	..	1	1	.	1	5	..	..	..	4	2
Newbury	..	..	1	..	..	1	..	..	..	3	..	1	2	2	2	4	1	..	..	..	..	..	1	..	..	..	..	2	1	..	..	..	1	..	..	..	..	..	..	..	..
New London	..	..	..	..	..	..	..	..	..	3	..	2	1	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	..	3	..	..	..	1	2

Northfield	..	..	..	..	..	..	..	..	..	2	..	1	1	1	1	2	1	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	1	..	..	..	..	..	1	..
Pembroke	..	..	1	..	..	..	1	..	..	6	..	3	3	3	4	7	1	3	..	..	..	..	1	..	..	..	2	3	..	..	..	..	..	..	..	5	..	..	..	4	1
Pittsfield	2	..	3	..	..	2	3	..	..	6	..	2	4	4	7	11	2	6	..	..	..	3	..	3	..	..	8	6	5	..	..	1	4	..	1	5	..	..	..	6	..
Salisbury	..	..	..	..	..	..	..	..	..	2	..	..	2	..	2	2	1	1	..	..	..	..	..	..	..	..	1	1	3	..	..	1	2	1	..	1	..	..	..	2	..
Sutton	..	..	1	..	..	..	1	..	..	5	..	3	2	3	3	6	1	..	..	..	..	..	..	..	1	..	..	2	3	..	..	3	..	..	..	1	..	..	1	2	..
Warner	2	..	2	..	..	1	3	..	..	4	..	..	4	1	7	8	..	2	..	..	..	..	..	1	..	..	3	..	3	..	..	2	1	..	1	2	1	1	..	1	4
Webster	..	..	..	..	..	..	..	..	..	2	..	1	1	1	1	2	..	1	..	..	..	..	1	..	..	..	..	2	3	..	..	3	..	..	..	3	..	..	..	1	2
Wilmot	..	..	1	..	..	1	..	..	..	4	..	3	1	4	1	5	..	..	..	..	..	1	..	..	..	..	..	1	3	..	..	2	1	..	..	1	..	..	1	2	..

TABLE 13—*continued.*

Towns in Merrimack County.	CLASS III.—LOCAL DISEASES—*continued.* Order 4.—Digestive Organs.																	Order 5.—Urinary Organs.										Order 6.—Generative Organs.					Order 8.—Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total. M	Total. F	Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total. M	Total. F	Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total. M	Total. F	Male.	Female.	Sex not stated.	Total.
Allenstown			1													1																								1	2		3
Andover																			1								1													5	3		8
Boscawen																			1	2		1				3	1													10	5		15
Bow										1				1		1	1		1							1														3	4		7
Bradford			1											1		2			1							1														3	5		8
Canterbury																																								7	7		14
Chichester		1										1				2																								2	1		3
Concord	1	1	3									1	1	2		5	4	2	9	1			1	1		7	7	3				3				1	2	2	1	72	62		134
Danbury																			1				1			2														2	2		4
Dunbarton																				1						1							1						1	2	2		4
Epsom																																								2	1		3
Franklin		1	1	1								1				2	2		1			1				2											1		1	15	17		32
Henniker								1						2		1	2		2							2														3	4		7
Hill																						1				1														2	2		4
Hooksett																			1							1								1					1	6	5		11
Hopkinton		1		1										1		1	2	1	2							2	1						1					1		10	9		19
Loudon	1									1							2						1			1														7	9		16
Newbury																																									3		3
New London																																								1	4		5
Northfield																																								2	1		3

Pembroke	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	4	..	11
Pittsfield	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	16	11	..	27
Salisbury	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	4	4	..	8
Sutton	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	2	..	8
Warner	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	7	6	..	13
Webster	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	4	6	..	10
Wilmot	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	4	3	..	7

TABLE 13—*continued.*

Towns in Merrimack County.	CLASS IV.—DEVELOPMENTAL DISEASES.																CLASS V.—VIOLENT DEATHS.																			Grand Total for All Classes.			
	Order 1.—Of Children.								Orders 2, 3, and 4.								Order 1.—Accident and Negligence.										Orders 3, 4, and 5.													
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total.		Childbirth.	Old Age.		Atrophy and Debility.		Total for Class IV.			Railroad Accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total.		Suicide.		Violent, not classed.		Cause not reported.		Total for Class V.			Males.	Females.	Not stated.	Total.
							M	F		M	F	M	F	Male.	Female.	Total.									M	F	M	F	M	F	M	F	Male.	Female.	Total.				
Allenstown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	3	8	..	11
Andover	..	..	..	..	..	..	..	..	..	..	4	..	1	..	5	5	3	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	3	..	3	13	12	..	25
Boscawen	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	14	7	..	21
Bow	..	..	..	..	..	1	..	1	..	2	1	..	..	2	2	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	2	8	8	..	16
Bradford	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	2	6	8	..	14
Canterbury	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	8	12	..	20
Chichester	..	..	..	..	..	..	..	..	1	..	1	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	4	5	1	10
Concord	17	2	1	..	1	..	13	8	1	6	2	5	5	24	16	40	1	2	..	1	..	2	2	4	8	4	4	1	..	..	2	..	14	5	19	145	119	..	264
Danbury	..		..	..	..	..	..	..	1	1	..	..	..	1	1	2	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	2	2	6	5	..	11
Dunbarton	..	..	..	..	..	..	..	..	..	1	1	..	.	1	1	2	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	....	4	4	..	8
Epsom	..	..	..	..	..	..	..	..	..	2	1	..	..	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	6	5	..	11
Franklin	..	..	2	..	1	..	1	2	..	..	..	1	..	2	2	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	3	23	33	..	56
Henniker	2	..	..	..	..	..	..	2	1	..	2	..	..	..	5	5		..	..	1	..	..	..	..	..	1	1	..	..	..	..	..	1	1	2	8	20	..	28
Hill	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	5		7
Hooksett	1	..	..	..	..	.	1	..	..	..	..	1	1	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	....	9	7	.	16
Hopkinton	..	..	..	..	..	..	..	..	..	..	1	1	..	1	1	2	..	..	..	.	..	..	..	..	..	..	..	..	..	..	5	4	5	4	9	25	20	..	45
Loudon	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	2	11	14	..	25
Newbury	..	1	..	..	..	..	..	1	..	..	1	..	..	..	2	2	..	..	..	..	..	1	..	..	1	..	..	..	..	..	1	..	2	..	2	5	7	..	12
New London	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	3	6	..	9

Northfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	.	..	..	..	..	1	1	1	1	2	5	3	..	8
Pembroke	..	1	..	.	..	..	..	1	..	..	1	..	..	..	2	2	..	..	..		..	..	..	..	..	..	..		..	..		1	.	1	1	14	15	..	29
Pittsfield	..	..	..	..	..	..	..	..	..	..	1	3	..	3	1	4	..	..		..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	27	22	..	49
Salisbury	..	..	..	..	..	..	..	..	..	1	1	..	1	1	2	3	..		..	..	..	..	..	..	..		..	.	..	..	..	..	..	..	....	5	8	..	13
Sutton	..	..	..	..	..	..	..	..	..	2	1	1	..	3	1	4		.		..	..	..	..	..	..	..	1	..	..	..	1	..	2	..	2	15	7	..	22
Warner	1	..	..	..	..	..	1	..	..	..	1	1	..	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	2	10	19	1	30
Webster	..	..	..	..	..	..	..	..	..	4	1	2	..	6	1	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	12	8	..	20
Wilmot	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	1	..	..	..	..	..	1	..	..	..	..	..	1	..	2	..	2	10	6	..	16

TABLE 13 — *continued.*

Towns in Hillsborough County.	CLASS I. — ZYMOTIC DISEASES.																																		
	Order 1. — Miasmatic.																				Order 2. — Enthetic.							Order 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro-spinal Meningitis.	Total.		Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total.		Alcoholism.	Privation and Neglect.	Total.		Male.	Female.	Sex not stated.	Total.
																			M	F						M	F			M	F				
Amherst	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	..	..	..	..	..		..	..	..	..	..	...	...	..	...
Antrim	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	...	2	1		..	..	..	..	..	..	..	..	..	..	2	1	..	3
Bedford	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	.	..	..	..	..	..	..	..	..	..	..	..	1	...	..	1
Bennington	..	..	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	....	2	1	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Brookline	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	..	..	.	..	..	..	..	..	..	..	..	..	1	...	..	1
Deering	..	1	2	..	..	..	..	..	..	..	..	..	..		..	..	..	....	2	1	..	..	..	..	..	..	..		..	..	..	2	1	..	3
Francestown	..	..	..	1	..	..	..	..	..	..	..	..		..	..		..	....	...	1	..	..	..	..	..	..	..	..	..	..	..	...	1	..	1
Goffstown	..	..	1	..	..	..	2	..	1	..	..	1	..	1	..	..	..	....	...	6	..	..	..	..	..	..	..	..	..	..	..	...	6	..	6
Greenfield	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	1	...	..	..	..	..	..	..	..	..	..	..	..	1	...	..	1
Greenville	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	..	..	...	2	1	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Hancock	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	..	..	....	...	3	..	..	..	..	..	..	..	..	..	..	..	...	3	..	3
Hillsborough	..	..	..	..	..	..	..	1	..	1	..	..	..	..	2	..	1	...	3	2	..	..	..	..	..	..	..	..	..	..	..	3	2	..	5
Hollis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	...	...	..	..	..	..	..	..	..	..	..	..	..	...	...	..	...
Hudson	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	...	...	2	..	..	..	..	..	..	..	..	..	..	..	...	2	..	2
Litchfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	...		..	..	..	..	..		..	..	..	..	...	...	..	...
Lyndeborough	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	...	...		..	..	..	..	..	..	..	..	..	..	...	...	..	...
Manchester	2	37	8	20	..	12	11	22	1	3	1	..	3	6	88	1	7	6	118	110	5	..	..	..	..	1	4	..	..	..	..	119	114	..	233
Mason	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	...	...	..	..	..	..	..	..	..	..	..	..	..	...	...	..	...
Merrimack	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	...	..	..	..	..	..	..	..	..	..	..	..	1	...	.	1
Milford	..	..	..	1	..	..	..	1	..	..	..	..	..	..	2	.	..	....	3	1	1	..	..	..	..	1	..	..	..	..	..	4	1	..	5

Mont Vernon	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	1	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Nashua	..	..	14	3	..	5	4	8	1	3	..	1	3	10	13	..	..	...	28	37	1	..	..	..	1	..	..	..	..	..	29	37	..	66
New Boston	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	...	..	..	..	..	..	..	..	..	..	..	..	...	...	..	...
New Ipswich	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	1	..	..	..	..	..	..	..	..	..	..	1	1		2
Pelham	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	...	...	..	..	..	..	..	..	..	..	..	..	...	...	..	...
Peterborough	..	1	..	2	..	1	..	1	1	..	..	..	..	1	..	..	..	....	5	2	..	..	..	..	..	..	..	..	..	..	5	2	..	7
Sharon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	...	...	..	..	..	..	..	..	..	..	..	..	...	...	..	...
Temple	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	...	..	..	..	..	..	..	..	..	..	..	...	...	..	...
Weare	..	..	..	..	..	1	1	..	..	..	1	..	1	..	1	..	..	1	2	4	1	..	..	..	..	1	..	..	..	..	2	5	..	7
Wilton	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	...	..	..	..	..	..	..	..	..	..	..	1	...	..	1
Windsor	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	....	...	...	..	..	..	..	..	..	..	..	..	..	...	...	..	...

TABLE 13 — *continued.*

Towns in Hillsborough County.	CLASS II. — CONSTITUTIONAL DISEASES.																CLASS III. — LOCAL DISEASES.																								
	Order 1. — Diathetic.							Order 2. — Tubercular.						Total for Cl. II.			Order 1. — Nervous System.												Orders 2 and 3.												
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total.		Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total.		Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total.		Heart disease.	Aneurism.	Pericarditis.	Total.		Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total.	
						M	F					M	F														M	F				M	F							M	F
Amherst	..	1	..	..	..	1	..	..	..	2	..	.	2	1	2	3	..	..	..	..	..	1	..	..	..	..	1	.	5	..	..	2	3	..	..	1	..	..	1	1	1
Antrim	..	..	1	..	..	..	1	..	..	6	..	3	3	3	4	7	1	1	..	..	..	..	..	1	..	..	2	1	2	..	..	..	2	..	..	2	..	..	..	1	1
Bedford	1	..	3	..	..	3	1	..	..	4	..	2	2	5	3	8	..	2	..	..	..	..	.	..	..	.	1	1	2	..	..	1	1	..	2	..	..	..	..	..	2
Bennington	..		1	..	..	1	..	1	..	1	..	..	2	1	2	3	1	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Brookline	.	..	..	..	..	..	..	1	..	3	..	1	3	1	3	4	2	2	..	..	..	..	..	..	..	.	3	1	1	.	..	1	..	..	..	..	..	..	..	..	..
Deering	1	..	..	..	..	..	1	..	..	3	..	1	2	1	3	4	..	2	..	..	..	..	..	..	..	..	1	1	1	..	..	1	..	..	..	2	..	..	..	..	2
Francestown	..	..	1	..	..	..	1	..	..	...	..	..	..	..	1	1	1	1	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	1
Goffstown	..	..	1	..	..	1	..	..	..	6	..	1	5	2	5	7	1	..	..	.	..	..	..	1	..	..	2	..	4	..	..	1	3	..	..	7	..	..	..	3	4
Greenfield	..	..	..	..	..	..	..	1	..	2	1	2	2	2	2	4	1	1	..	..	..	.	..	1	..	..	2	1	4	..	..	3	1		1	..	..	..	..	1	..
Greenville	..	..	..	..	1	1	..	..	..	4	..	3	1	4	1	5	..	..	..	..	..	1	1	..	..	..	2	..	1	..	..	..	1	..	..	3	..	..	..	2	1
Hancock	..	1	..	..	..		1	..	..	1	..	1	..	1	1	2	2	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	1	..	..	..	..	..	..	..	..
Hillsborough	..	..	3	..	1	2	2	..	..	6	1	2	5	4	7	11	2	..	..	..	..	..	..	..	..	..	2	..	2	..	..	1	1	..	..	6	..	..	..	1	5
Hollis	..	..	1	..	..	1	..	..	..	2	..	1	1	2	1	3	3	2	..	..	..	..	1	..	..	..	3	3	3	..	..	2	1	..	..	2	..	..	..	2	..
Hudson	..	..	1	..	..	..	1	..	..	3	..	1	2	1	3	4	..	..	..	..	..	..	..	..	..	..	.	..	2	..	..	1	1	..	1	3	..	..	..	4	..
Litchfield	..	..	2	..	..	..	2	..	..	1	..	1	..	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	2	..	..	..	..	2
Lyndeborough	..	..	..	..	..	..	..		..	2	..	1	1	1	1	2	..	1	..	..	..	..	..	..		..	1	..	..	.	.	..	.	..	..	1	..	..	..	..	1
Manchester	9	5	17	1	..	11	21	4	..	107	1	47	65	58	86	144	14	28	3	1	.	25	15	14	1	1	48	52	31	..	..	13	18	1	20	55	3	..	2	28	53
Mason	..	..	.	..	..	..	..		..	3	..	2	1	2	1	3	..	..	..	..	..	..	..	..	..	..	1	.	2	.	..	2		..	1	..	..	..	..	1	..
Merrimack	..	..	..	..	..	..	..	..	..	1	1	..	2	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	.	..	..	..	..
Milford	1	..	4	..	..	2	3	..	..	6	..	5	1	7	4	11	2	2	..	..	..	1	2	..	..	..	3	4	6	..	..	3	3	..	2	2	1	..	..	..	5
Mont Vernon	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	1	..	..		..	..	..	..	..	..	..	1	3	..	..	2	1	..	1	1	..	..	..	..	2
Nashua	4	3	6	..	1	4	10	2	..	51	3	27	29	31	39	70	7	5	1	..	..	7	9	4	..	..	17	16	26	..	..	11	15	3	8	31	1	..	..	23	20
New Boston	1	..	1	..	..	1	1	..	..	3	..	3	..	4	1	5	4	2	..	..	..	..	..	1	..	..	3	4	2	1	..	..	3	..	1	..	..	..	..	1	..

New Ipswich	..	..	.	..	..	..	..	..	..	4	..	1	3	1	3	4	1	1	..	..	..	..	..	..	..	..	1	1	2	..	..	2	..	..	3	..	..	..	.	1	2
Pelham	.	..	2	..	1	1	2	..	..	3	..	1	2	2	4	6	..	2	..	..	..	..	..	1	..	..	1	2	3		..	1	2	..	..	3	..	..	..	2	1
Peterborough	..	..	3	..	..	..	3	1	..	3	..	3	1	3	4	7	..	2	..		..	1	..	1	..	..	3	1	6	..	..	1	5	..	3	1	..	..	..	2	2
Sharon	..	..	..	.	..	..	..	..	..	...	..	..		..	..	...	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	1	.	1	..	.	..	..	.	1
Temple	..	..	..	..	..	..	..	..	.	2	1	1	2	1	2	3	1	..	..	..	..	..	..	..	..	..	1	..	2	..	..	1	1	..	..	.	..		..	.	.
Weare	3	..	1	..	..	3	1	..	..	3	..	2	1	5	2	7	..	3		1	..	1	..	2	..	..	4	3	6	..	..	3	3	..	..	2	..	..	..	2	..
Wilton	..	..	2	..	1	2	1	..	..	...	..	..	..	2	1	3	..	..	..	..	..	2	..	..	..	..	..	2	2	..	..	1	1	..	1	3	..	..	..	2	2
Windsor	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE 13—*continued.*

Towns in Hillsborough County.	CLASS III.—LOCAL DISEASES—*continued.*																																										
	Order 4.—Digestive Organs.																	Order 5.—Urinary Organs.										Order 6.—Generative Organs.					Order 8.—Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total.		Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total.		Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total.		Male.	Female.	Sex not stated.	Total.
																M	F									M	F											M	F				
Amherst																																								4	4		8
Antrim		5									1					5	1																							8	5		13
Bedford														2		1	1																							3	5		8
Bennington	1																1																								3		3
Brookline														1			1																							4	2		6
Deering																																								2	3		5
Francestown																		1								1			1			1								1	4		5
Goffstown																																								6	7		13
Greenfield														1		1		1								1														8	2		10
Greenville	1																1																							4	3		7
Hancock													1				1																								4		4
Hillsborough												1					1												1			1								4	8		12
Hollis						1											1																							7	5		12
Hudson																			2							2														7	1		8
Litchfield																																									2		2
Lyndeborough																		1	1							2														3	1		4
Manchester	8	6	10	1	1		2	1		3	3		1	10		17	29	2	12		1		4			12	7				1	1	2	4			1	4	3	118	163	4	285
Mason	1																1																							4	1		5
Merrimack								1								1			1							1														2	1		3
Milford	1																1	1				1	1	1		3	1													9	14		23

Mont Vernon																							1			1														3	4		7
Nashua	3	4												1		2	6		4	2		1	1			3	5							2				2		58	62		120
New Boston																			1							1														5	7		12
New Ipswich		1															1																							4	4		8
Pelham																				1						1					1	1								5	6		11
Peterborough		1	1													1	1		2	1						2	1							1				1		10	10		20
Sharon																																								1	2		3
Temple																																								2	1		3
Weare												1					1		2				1			3														12	7		19
Wilton			1													1																								4	5		9
Windsor																																											

TABLE 13—*continued.*

TOWNS IN HILLSBOROUGH COUNTY.	CLASS IV.—DEVELOPMENTAL DISEASES.																CLASS V.—VIOLENT DEATHS.																			Grand Total for All Classes.			
	ORDER 1.—Of Children.								ORDERS 2, 3, AND 4.								ORDER 1.—Accident and Negligence.										ORDERS 3, 4, AND 5.												
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total.		Childbirth.	Old Age.		Atrophy and Debility.		Total for Class IV.			Railroad Accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total.		Suicide.		Violent, not classed.		Cause not reported.		Total for Class V.			Males.	Females.	Not stated.	Total.
							M	F		M	F	M	F	Male.	Female.	Total.									M	F	M	F	M	F	M	F	Male.	Female.	Total.				
Amherst	..	2	..	..	..	..	..	2	..	..	1	..	1	..	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	6	10	..	16
Antrim	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	15	10	..	25
Bedford	..	..	..	..	..	..	..	..	..	1	2	..	..	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	2	12	10	..	22
Bennington	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	3	6	..	9
Brookline	..	..	..	..	..	..	..	..	..	1	..	1	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	8	5	..	13
Deering		..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	5	9	..	14
Francestown	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	2		..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	....	1	8	..	9
Goffstown	1	..	..		..	..	1		..	1	4	1	..	3	4	7	..	..	..		1	..	..	..	..	1	..	..	..	..	1	..	1	1	2	12	23	..	35
Greenfield	..	1	..	..	..	..	..	1	..	1	1	..	..	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	13	6	..	19
Greenville	1	..	..	..	1	..	2	..	..	..	1	..	1	2	2	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	13	7	..	20
Hancock	..	..	..	..	1	..	1	..	1	1	..	1	..	3	1	4	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	1	2	5	10	..	15
Hillsborough	..	..	..	..	..	..	..	..	..	..	1	1	1	1	2	3	..	..	..	1	..	..	..	..	1	..	..	..	..	..	1	..	2	..	2	14	19	..	33
Hollis	..	..	..	..	..	..	..	..	..	2	3	..	..	2	3	5	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	1	1	1	2	12	10	..	22
Hudson	..	..	..	..	..	..	..	..	..	2	..	..	1	2	1	3	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	11	7	..	18
Litchfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	....	1	4	..	5
Lyndeborough	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	....	4	3	..	7
Manchester	38	2	..	..	1	7	35	13	5	9	14	12	17	56	49	105	..	..	..	6	..	6	..	8	8	12	1	1	..	..	17	15	26	28	54	358	440	23	821
Mason	..	1	..	..	..	..	..	1	..	..	2	..	..	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	6	5	..	11
Merrimack	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	1	..	..	..	1	..	1	2	1	..	..	..	..	1	..	3	1	4	6	4	..	10

Milford	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	1	2	..	..	..	..	..	1	.	3	..	3	23	20	..	43
Mont Vernon	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	4	8	..	12
Nashua	17	2	1	..	..	..	14	6	1	1	3	8	7	23	17	40	..	..	..	..	..	1	1	1	3	..	..	..	..	..	19	25	22	25	47	153	180	10	343
New Boston	2	1	..	..	..	..	2	1	..	2	..	..	..	4	1	5	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	14	9	..	23
New Ipswich	1	..	..	..	..	..	1	..	..	..	1	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	8	9	..	17
Pelham	..	..	..	..	..	..	..	..	..	2	1	1	..	3	1	4	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	1	11	11	..	22
Peterborough	1	..	..	..	..	..	1	..	..	3	3	1	.	5	3	8	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	1	24	19	..	43
Sharon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	2	..	3
Temple	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	1	..	1	2	..	..	..	..	..	..	..	2	..	2	5	3	..	8
Weare	3	..	..	..	..	..	2	1	..	4	2	..	..	6	3	9	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	1	26	17	..	43
Wilton	..	..	..	..	..	..	..	..	..	..	2	2	1	2	3	5	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	..	2	2	9	11	..	20
Windsor	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....	...	..	....

TABLE 13 — *continued.*

Towns in Cheshire County.	CLASS I. — ZYMOTIC DISEASES.																																	
	Order 1. — Miasmatic.																			Order 2. — Enthetic.							Order 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro spinal Meningitis.	Total.		Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total.		Alcoholism.	Privation and Neglect.	Total.		Male.	Female.	Sex not stated.	Total.
																			M	F						M	F			M	F				
Alstead	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Chesterfield	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Dublin	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Fitzwilliam	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gilsum	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Harrisville	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Hinsdale	..	..	..	..	..	..	..	2	..	..	..	..	..	1	2	..	1	..	3	3	..	..	..	..	..	..	..	..	..	..	..	3	3	..	6
Jaffrey	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Keene	..	..	..	1	..	..	1	4	..	..	..	..	2	..	2	..	..	..	5	5	1	..	..	..	..	1	..	..	..	..	..	6	5	..	11
Marlborough	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3
Marlow	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Nelson	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Richmond	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Rindge	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Roxbury	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stoddard	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Sullivan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Surry	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Swanzey	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	1	2	..	..	..	1	..	..	1	..	..	..	..	1	3	..	4
Troy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Walpole	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	....	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
Westmoreland	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Winchester	..	..	..	1	..	3	.	2	..	..	..	1	..	..	2	..	..	....	6	3	..	..	..	..	..	..	..	..	..	..	..	6	3	..	9

TABLE 13—*continued.*

Towns in Cheshire County.	CLASS II. — CONSTITUTIONAL DISEASES.																CLASS III. — LOCAL DISEASES.																									
	Order 1. — Diathetic.							Order 2. — Tubercular.						Total for Cl. II.			Order 1. — Nervous System.												Orders 2 and 3.													
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total.		Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total.		Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total.		Heart disease.	Aneurism.	Pericarditis.	Total.		Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total.	
						M	F					M	F														M	F				M	F							M	F
Alstead	..	..	1	..		1	..	..	..	2	..	..	2	1	2	3	..	3	.	..	..	..	..	..	..	..	2	1	4	..	..	2	2	..	..	1	.	..	..	1	..
Chesterfield	1	..	1	..	..	..	2	..	..	1	..	1	..	1	2	3	..	2	..	..	..	..	..	..	..	..	1	1	2	.	..	1	1	..	..	1	..	..	..	..	1
Dublin	..	.	1	1	..	1	1	..	..	..	..	..	..	1	1	2	..	..	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Fitzwilliam	..	..	1	..	1	..	2	..	..	2	..	..	2	..	4	4	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	5	..	..	..	2	3
Gilsum	..	1	..	..	..	1	..	..	..	..	..	..	..	1	..	1	1	..	1	..	..	1	..	..	..	..	3	..	..		..	..	..	..	1	1	..	..	..	1	1
Harrisville	..	..	..	..	..	..	..	..	..	3	..	..	3	..	3	3	1	..	..	..	..	..	..	..	..	..	1	..	..	..	.	..		..	..	4	..	..	..	2	2
Hinsdale	..	2	..	..	..	1	1	..	..	4	..	1	3	2	4	6	1	1	..	..	..	..	2	..	..	.	1	3	2	..	..	1	1	..	..	2	..	..	..	2	..
Jaffrey	1	..	1	..	..	1	1	..	..	6	..	4	2	5	3	8	..	1	..	..	..	.	1	..	..	..	1	1	2	..	..	1	1	..	..	4	..		..	3	1
Keene	1	..	3	1	..	1	4	..	..	26	..	9	17	10	21	31	4	2	..	..	..	1	1	..	..	..	4	4	3	..	..	2	1	1	..	14	..	..	..	7	8
Marlborough	..	..	..	..	..	..	..	..	..	5	..	1	4	1	4	5	2	2	..	..	..	..	1	..	..	..	2	3	1	..	.	..	1	..	..	2	..	..	..	1	1
Marlow	.	1	..	..	..	..	1	..	..	1	..	1	..	1	1	2	1	.	..	..	..	2	1	.	..	..	2	2	1	..	..	1	..	..	..	.	..	..	..	..	..
Nelson	..	..	..	..	..	..	..	..	..	3	..	1	2	1	2	3	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	1	..	..	..	1	..
Richmond	..	..	..	1	..	..	1	..	..	2	..	1	1	1	2	3	..	1	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	..	.	..	..	..	..	..	..
Rindge	2	..	..	..	..	2	..	..	..	2	..	2	..	4	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	2	1
Roxbury	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..
Stoddard	.	..	..	..	1	..	1	..	..	1	..	..	1	..	2	2	..	..	..	..	..	1	..	1	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	1
Sullivan	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	.	..	..	..	..	..	..	..
Surry	..	..	..	..	1	..	1	..	..	..	..	.	..	.	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	..	..	..	.	1
Swanzey	..	..	2	..	..	2	..	..	..	3	..	..	3	2	3	5	1	3	..	1	..	..	..	..	..	..	4	1	5	..	..	3	2	..	..	2	..	..	..	1	1

Troy		..	2	..	..	..	2	..	..	2	..	..	2	..	4	4	..	1	..	..	..	..	..	..	..	..	1	.	3	..	..	1	2	..	..	2	..	..	..	..	2
Walpole	..	..	..	..	..	..	..	..	..	5	..	3	2	3	2	5	3	..	1	..	..	2	..	..	..	.	4	2	2	.	..	1	1	..	..	3	..	..	..	..	3
Westmoreland	..	..	1	..	..	..	1	..	.	2	1	2	1	2	2	4	..	6		..	..	..	..	..	..	..	2	4	3	..	..	2	1	..	2	2	..	..	..	2	2
Winchester	..	..	..	..	..	..	..	..	..	4	..	1	3	1	3	4	..	..	..	..	..	1	..	..	..	..	1		5	..	..	3	2	..	1	4	..	..	..	4	1

TABLE 13 — *continued.*

Towns in Cheshire County.	CLASS III. — LOCAL DISEASES — *continued.*																																										
	Order 4. — Digestive Organs.																	Order 5. — Urinary Organs.										Order 6. — Generative Organs.					Order 8. — Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total. M	Total. F	Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total. M	Total. F	Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total. M	Total. F	Male.	Female.	Sex not stated.	Total.
Alstead	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	3	..	8
Chesterfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	..	5
Dublin	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	4	..	4
Fitzwilliam	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	..	6
Gilsum	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	1	..	6
Harrisville	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	2	..	7
Hinsdale	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	5	4	..	9
Jaffrey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	3	..	8
Keene	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	4	2	..	..	..	..	..	5	1	..	..	..	..	..	..	..	..	..	..	..	..	18	15	..	33
Marlborough	1	..	..	..	..	..	..	1	..	..	..	..	1	1	..	2	2	..	1	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	..	5	9	..	14
Marlow	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	..	6
Nelson	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
Richmond	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3
Rindge	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Roxbury	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Stoddard	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	4
Sullivan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Surry	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Swanzey	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	5	..	14

Troy	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	4	..	7
Walpole	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	8	1	14
Westmoreland	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	8	..	16
Winchester	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	4	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	4	..	17

TABLE 13—*continued.*

Towns in Cheshire County.	CLASS IV.—DEVELOPMENTAL DISEASES.																CLASS V.—VIOLENT DEATHS.																			Grand Total for All Classes.			
	Order 1.—Of Children.								Orders 2, 3, and 4.								Order 1.—Accident and Negligence.										Orders 3, 4, and 5.												
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total.		Childbirth.	Old Age.		Atrophy and Debility.		Total for Class IV.			Railroad Accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total.		Suicide.		Violent, not classed.		Cause not reported.		Total for Class V.			Males.	Females.	Not stated.	Total.
							M	F		M	F	M	F	Male.	Female.	Total.									M	F	M	F	M	F	M	F	Male.	Female.	Total.				
Alstead	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	3	..	3	10	5	..	15
Chesterfield	..	..	..	..	..	..	..	..	..	..	2	..	2	..	4	4	..	..	..	..	..	..	..	1	1	..	..	..	..	..	2	..	3	..	3	6	11	..	17
Dublin	..	..	..	..	..	..	..	..	..	2	4	..	..	2	4	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	2	5	11	..	16
Fitzwilliam	..	..	..	..	..	..	..	..	..	1	1	2	..	3	1	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	6	9	..	15
Gilsum	..	..	..	..	..	..	..	..	..	1	2	..	..	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	.	1	8	5	..	13
Harrisville	..	..	..	..	..	..		..	..	1	1	..	..	1	1	2	1	..	..	..	..	..	..	..	1	..	..	..	..	.	..	1	1	1	2	7	8	..	15
Hinsdale	..	..	..	..	..	..		..	..	1	1	2	1	3	2	5	..	1	..	..	..	..	..	1	2	..		..	..	..	1	..	3	..	3	16	13	..	29
Jaffrey	..	..	..	..	..	1	1	..	1	..	2	..	..	1	3	4	.	..	..	1	1	..	..	..	2	..	1	..	..	..	1	2	4	2	6	14	12	2	28
Keene	3	2	..	..	..	..	4	1	1	4	6	3	4	11	12	23	1	1	1	1	..	..	..	3	6	1	1	1	..	..	4	3	11	5	16	56	58	..	114
Marlborough	..	..	..	..	..	..	..	..	..	1	..	2	..	3	..	3	..	..	..	..	..	..	..	1	1	..	1		..	..	2	2	4	2	6	14	17	..	31
Marlow	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	1	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	2	2	5	7	..	12
Nelson	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	.	..	1	..	1	4	2	..	6
Richmond	..	..	..	..	..	..	..	..	..	1	2	..	..	1	2	3	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	3	1	3	4	4	11	..	15
Rindge	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	6	2	..	8
Roxbury	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....	....	..	....
Stoddard	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	1	..	1	2	..	..	..	..	..	1	1	3	1	4	6	8	..	14
Sullivan	..	..	..	..	..	..	..	..	..	1	1		..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	3	1	..	4
Surry	..	..	..	..	..	..	.	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....	4	..	4
Swanzey	2	..	..	..	..	..	2	..	..	1	1	..	..	3	1	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	16	12	..	28

Troy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	1	4	8	..	12
Walpole	..	..	..	..	..	..	..	..	..	1	3	..	..	1	3	4	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	4	1	4	5	11	17	2	30
Westmoreland	..	..	..	..	..	..	..	..	..	..	3	1	..	1	3	4	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	2	..	3	3	12	16	..	28
Winchester	1	..	..	..	..	..	1	..	1	1	..	..	.	2	1	3	..	..	..	1	..	1	..	..	..	2	1	..	..	..	2	2	3	4	7	25	15	..	40

TABLE 13 — *continued.*

TOWNS IN SULLIVAN COUNTY.	CLASS I. — ZYMOTIC DISEASES.																																	
	ORDER 1. — Miasmatic.																				ORDER 2. — Enthetic.							ORDER 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro-spinal Meningitis.	Total.		Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total.		Alcoholism.	Privation and Neglect.	Total.		Male.	Female.	Sex not stated.	Total.
																			M	F						M	F			M	F				
Acworth	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Charlestown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Claremont	..	..	..	..	..	..	..	1	..	..	..	..	..	..	3	..	1	..	2	3	2	..	..	..	..	2	..	..	..	..	..	4	3	..	7
Cornish	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Croydon	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Goshen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Grantham	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Langdon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lempster	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Newport	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Plainfield	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Springfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sunapee	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Unity	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Washington	..	1	..	..	..	..	..		..	..	..	..	..	1	1	..	1	..	3	1	..	..	..	..	..	..	..	..	..	..	..	3	1	..	4

TOWNS IN SULLIVAN COUNTY.	CLASS II. — CONSTITUTIONAL DISEASES.																CLASS III. — LOCAL DISEASES.																								
	ORDER 1. — Diathetic.							ORDER 2. — Tubercular.						Total for Cl. II.			ORDER 1. — Nervous System.												ORDERS 2 AND 3.												
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total.		Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total.		Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total.		Heart disease.	Aneurism.	Pericarditis.	Total.		Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total.	
						M	F					M	F														M	F				M	F							M	F
Acworth	..	..	..	..	..	..	..	..	..	4	..	3	1	3	1	4	1	..	..	..	..	..	..	.	..	..	..	1	5	..	..	3	2	..	1	2	..	..	..	2	1
Charlestown	1	..	2	..	..	2	1	..	..	3	..	1	2	3	3	6	2	..	..	..	..	..	1	1	..	..	2	2	3	..	..	1	2	..	1	4	..	..	1	2	4
Claremont	..	..	3	..	..	1	2	..	..	11	1	5	7	6	9	15	6	2	1	1	..	..	1	1	1	.	7	6	5	..	..	3	2	..	..	2	..	..	..	1	1
Cornish	..	..	2	..	..	..	2	..	..	2	..	2	..	2	2	4	4	..	..	..	..	..	..	1	1	..	5	1	3	.	..	..	3	..	..	2	..	..	..	1	1
Croydon	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	1	1	..	..	..	1	1
Goshen	..	..	..	..	..	..	..	..	..	2	..	1	1	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	1	..	..	1	..	..	..	1	..
Grantham	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	1	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..
Langdon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lempster	..	..	..	..	..	..	..	..	..	2	..	1	1	1	1	2	..	2	1	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Newport	..	..	..	..	..	..	..	1	..	6	1	5	3	5	3	8	4	3	..	..	..	..	1	..	..	..	4	4	1	..	..	1	..	..	1	5	..	..	..	3	3
Plainfield	..	..	1	..	..	..	1	..	..	1	..	1	..	1	1	2	3	1	..	..	..	..	..	..	..	..	4	..	3	..	..	1	2	..	..	3	..	..	..	2	1
Springfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..
Sunapee	..	..	..	..	..	..	..	1	..	1	..	1	1	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	2	1	..	..	..	..	..	..	..	..
Unity	..	1	4	..	..	2	3	..	..	3	..	3	..	5	3	8	..	1	..	..	..	1	..	1	..	..	3	..	1	..	..		1	..	..	..	..	..	..	..	..
Washington	..	1	..	..	..	..	1	..	..	..	..	..	..	.	1	1	..	..	..	..	..	..	..	2		..	1	1	1	..	..	1	..	..	..	2	..	..	..	1	1

TABLE 13 — *continued.*

Towns in Sullivan County.	CLASS III. — LOCAL DISEASES — *continued.*																																										
	ORDER 4. — Digestive Organs.																	ORDER 5. — Urinary Organs.										ORDER 6. — Generative Organs.					ORDER 8. — Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total.		Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total.		Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total.		Male.	Female.	Sex not stated.	Total.
																M	F									M	F											M	F				
Acworth	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	..	10
Charlestown	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	7	8	..	15
Claremont	..	2	1	..	..	..	..	..	..	..	..	2	..	..	..	1	4	..	3	..	1	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	16	13	..	29
Cornish	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	5	..	13
Croydon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	2	4	..	6
Goshen	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	..	5
Grantham	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Langdon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Lempster	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	4
Newport	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	7	..	17
Plainfield	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	3	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	11	3	..	14
Springfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Sunapee	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	3	1	..	4
Unity	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	3	3	..	6
Washington	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	..	6

Towns in Sullivan County.	CLASS IV. — DEVELOPMENTAL DISEASES.																CLASS V. — VIOLENT DEATHS.																			Grand Total for All Classes.			
	Order 1. — Of Children.								Orders 2, 3, and 4.								Order 1. — Accident and Negligence.										Orders 3, 4, and 5.													
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total.		Childbirth.	Old Age.		Atrophy and Debility.		Total for Class IV.			Railroad Accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total.		Suicide.		Violent, not classed.		Cause not reported.		Total for Class V.			Males.	Females.	Not stated.	Total.
							M	F		M	F	M	F	Male.	Female.	Total.									M	F	M	F	M	F	M	F	Male.	Female.	Total.				
Acworth	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	11	8		19
Charlestown	1	..	..	..	..	..	1	..	..	3	2	..	..	4	2	6	..	..	..	..	..	3	..	..	1	2	1	..	..	..	..	..	2	2	4	15	15	..	30
Claremont	3	..	..	..	..	..	1	2	1	3	2	1	..	5	5	10	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	2	4	2	6	35	32	..	67
Cornish	..	..	..	..	..	..	..	..		1	..	..	..	1	..	1	..	1	..	..	..	..	..	1	2	..	..	..	..	..	..	3	2	3	5	13	11	..	24
Croydon	..	1	1	..	..	..	1	1	..	1	1	..	..	2	2	4	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	1	5	8	..	13
Goshen	1	..	..	..	..	1	1	1	..	..	1	..	..	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	4	7	..	11
Grantham	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	2	4	..	6
Langdon	1	..	..	..	..	..	1	..	..	..	1	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	1	1	3
Lempster	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	4	5		9
Newport	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	.	2	..	..	..	1	..	..	2	1	..	..	..	..	..	..	2	1	3	18	12	..	30
Plainfield	1	..	..	..	..	..	1	..	1	1	..	..	..	2	1	3	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	16	5	..	21
Springfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	2	1	..	3
Sunapee	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	..	2	2	5	4	..	9
Unity	..	..	..	..	..	..	..	..	..	3	2	..	..	3	2	5	..	..	..	..	1	..	..	1	1	1	..	1	..	..	..	..	1	2	3	13	11	..	24
Washington	..	..	1	..	..	..	1		..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	.	1	..	..	..	..	..	2	..	3	3	8	7	..	15

TABLE 13 — *continued.*

Towns in Grafton County.	Class I. — Zymotic Diseases.																																	
	Order 1. — Miasmatic.																			Order 2. — Enthetic.							Order 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro-spinal Meningitis.	Total.		Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total.		Alcoholism.	Privation and Neglect.	Total.		Male.	Female.	Sex not stated.	Total.
																			M	F						M	F			M	F				
Alexandria	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ashland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bath	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Benton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bethlehem	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Bridgewater	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
Bristol	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Campton	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	1	..	..	..	..	..	1	..	..	..	..	1	2	..	3
Canaan	..	..	..	..	..	..	..	2	..	..	..	..	1	..	3	..	1	..	4	3	..	..	..	..	..	..	..	..	..	..	..	4	3	..	7
Dorchester	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Easton	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Ellsworth	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	2	2	..	4
Enfield	..	..	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	2	3	..	..	..	..	..	..	..	..	..	..	..	2	3	..	5
Franconia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Grafton	..	..	..	1	..	..	..	..	1	..	..	1	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Groton	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Hanover	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	1	..	..	1
Haverhill	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	1	1	1	..	1	..	..	2	..	..	..	..	..	3	1	..	4
Hebron	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Holderness	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1

Landaff																																			
Lebanon				1								2			3		1		4	3												4	3		7
Lincoln																																			
Lisbon															1				1													1			1
Littleton				1				2							2				1	4												1	4		5
Livermore																																			
Lyman																																			
Lyme								1											1													1			1
Monroe								1											1													1			1
Orange																	1		1		1					1						2			2
Orford																																			
Piermont															1				1		1						1					1	1		2
Plymouth			3												1				3	1												3	1		4
Rumney			1					1											2													2			2
Thornton																																			
Warren								1											1													1			1
Waterville																																			
Wentworth																																			
Woodstock																																			

TABLE 13—*continued.*

Towns in Grafton County.	CLASS II.—CONSTITUTIONAL DISEASES.																CLASS III.—LOCAL DISEASES.																								
	Order 1.—Diathetic.							Order 2.—Tubercular.						Total for Cl. II.			Order 1.—Nervous System.												Orders 2 and 3.												
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total.		Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total.		Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total.		Heart disease.	Aneurism.	Pericarditis.	Total.		Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total.	
						M	F					M	F														M	F				M	F							M	F
Alexandria	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ashland	..	..	..	..	..	..	..	..	..	2	..	..	2	..	2	2	1	1	..	..	..	..	..	..	..	..	1	1	3	..	..	2	1	..	..	..	..	..	..	..	..
Bath	..	..	..	..	..	..	..	..	..	...	..	..		..	..	...	1	1	..	..	..	..	..	..	..	..	..	2	2	..	..	..	2	..	..	..	..	..	..	..	..
Benton	..	..	..	..	..	..	..	..	..	...	..	..	..	..	..	...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bethlehem	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	..	..	..	..	..	2	..	..	..	..	2	2	..	..	2	..	..	..	2	..	..	..	..	2
Bridgewater	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	1	1	..	..	..	..	1	..	..	..	3	..	1	..	..	1	..	..	..	1	..	..	..	..	1
Bristol	1	1	..	..	..	1	1	..	..	3	..	1	2	2	3	5	1	1	.	..	..	1	..	1	..	..	1	3	3	..	1	3	1	..	..	..	..	..	..	..	..
Campton	..	..	1	..	..	..	1	..	..	2	..	..	2	..	3	3	..	1	..	..	..	..	..	1	..	..	1	1	2	..	..	2	..	..	..	..	..	..	..	..	..
Canaan	..	..	1	..	..	..	1	..	..	5	1	3	3	3	4	7	2	2	..	..	.	1	..	..	..	..	..	5	2	..	..	1	1	..	2	..	..	..	..	..	2
Dorchester	..	..	1	..	..	..	1	..	..	...	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1
Easton	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ellsworth	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..		..	..	..	..
Enfield	1	..	1	..	1	1	2	..	..	4	..	2	2	3	4	7	1	1	..	..	..	1	..	1	..	..	3	1	2	..	..	1	1	..	..	2		..	..	..	2
Franconia	..	..	..	..	..	..	..	1	..	1	..	..	2	..	2	2	..	1	..	..	.	..	..	..	..	..	..	1	..	..	..	..	..	..	..	.	..	..	..	..	..
Grafton	2	..	..	..	..	..	2	..	..	2	..	1	1	1	3	4	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	2	..	..		1	2
Groton	..	..	2	..	..	1	1	..	..	1	..	1	..	2	1	3	..	2	..	..	..	..	..	..	..	..	1	1	1	..	..	..	1	..	..	1	..	..	..	..	1
Hanover	..	..	3	..	..	..	3	..	..	4	..	1	3	1	6	7	3	..	..	..	..	..	2	1	..	..	..	6	3	..	..	1	2	..	..	2	..	..	..	1	1
Haverhill	2	..	..	..	..	..	2	..	..	5	..	2	3	2	5	7	.	2	.	..	..	2	1	..	..	..	3	2	3	..	..	1	2	..	..	4	..	..	1	4	1
Hebron	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	.
Holderness	..	..	..	..	..	..	..	..	..	2	..	1	1	1	1	2	..	2	..	..	..	..	..	..	..	..	1	1	1	..	..	1	..	..	..	2	..	..	..	..	2

Landaff	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	..	2
Lebanon	2	..	4	1	..	4	3	..	..	11	..	6	5	10	8	18	2	2	..	..	..	5	2	..	1	..	5	7	3	..	..	2	1	1	1	2	..	..	..	3	1
Lincoln	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lisbon	..	..	2	..	..	2	..	..	..	..	..	..	..	2	..	2	..	2	..	..	..	..	2	2	..	..	3	3	1	..	..	..	1	..	..	2	..	..	..	1	1
Littleton	..	..	1	..	..	1	..	..	..	5	..	4	1	5	1	6	..	2	..	1	..	..	5	1	..	..	3	6	4	..	1	4	1	..	1	11	..	..	..	4	8
Livermore	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lyman	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	2	..	1	..	..	..	1	..	..	..	..	..	..	..	..
Lyme	..	1	1	..	..	1	1	..	..	2	..	..	2	1	3	4	..	1	..	..	..	..	1	..	..	..	..	2	1	..	..	..	1	..	..	2	..	..	..	2	..
Monroe	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	1	..	1	..	..	..	..	..	1	..	..	1	1	..	..	..	..	..	..	..	1	..	..	..	1	..
Orange	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Orford	..	1	..	..	..	1	..	..	..	4	..	2	2	3	2	5	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	3	..	..	..	2	2
Piermont	..	..	1	..	..	..	1	..	..	2	..	..	2	..	3	3	..	3	..	..	..	..	..	1	..	..	1	3	3	..	..	..	3	..	..	..	..	..	..	..	..
Plymouth	1	..	4	..	..	4	1	..	..	3	..	1	2	5	3	8	..	3	..	..	..	..	1	2	..	..	3	3	4	..	..	2	2	..	..	2	..	..	..	2	..
Rumney	..	..	2	..	..	..	2	..	..	2	..	1	1	1	3	4	2	1	..	..	..	..	1	..	..	..	3	1	2	..	..	1	1	..	..	2	..	..	..	1	1
Thornton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	3	..	..	..	1	2
Warren	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	1	..	..	..	2	..	2	..	..	..	2	..	..	..	..	..	..	..	..
Waterville	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wentworth	..	..	3	..	..	3	..	..	..	3	..	2	1	5	1	6	..	1	..	..	..	..	1	..	..	..	2	..	1	..	..	1	..	..	..	1	..	..	..		1
Woodstock	1	1	..	..	..	2	..	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..

TABLE 13—*continued.*

Towns in Grafton County.	CLASS III.—LOCAL DISEASES—*continued.*																																										
	Order 4.—Digestive Organs.																	Order 5.—Urinary Organs.										Order 6.—Generative Organs.					Order 8.—Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total.		Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total.		Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total.		Male.	Female.	Sex not stated.	Total.
																M	F									M	F											M	F				
Alexandria	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ashland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	3	3	..	6
Bath	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	5
Benton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bethlehem	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	..	8
Bridgewater	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	4	2	..	6
Bristol	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	1	..	..	..	..	..	1	..	1	1	..	..	1	..	1	..	1	..	..	..	1	..	8	6	..	14
Campton	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	5
Canaan	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	1	..	4	9	..	13
Dorchester	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3
Easton	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
Ellsworth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Enfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	1	5	5	..	10
Franconia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Grafton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	..	5
Groton	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	4	..	6
Hanover	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4	10	..	14
Haverhill	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	9	5	..	14
Hebron	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Holderness	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	4	..	7

Landaff	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3
Lebanon	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	..	3	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	11	12		23
Lincoln	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	..	...
Lisbon	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	5	..	10
Littleton	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	16	..	28
Livermore	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...	..	...
Lyman	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	3	2	.	5
Lyme	3	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	6	.	9
Monroe	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	.	3
Orange	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	...	.	1
Orford	1	2	..	..	..	..	..	..	..	..	..	1	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	5	..	9
Piermont	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	1	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	3	7		10
Plymouth	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	5		13
Rumney	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	5	..	11
Thornton	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	3	..	7
Warren	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	5
Waterville	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	...	..	1
Wentworth	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	1	2	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	4	4	1	9
Woodstock	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	1	..	1

TABLE 13—*continued.*

TOWNS IN GRAFTON COUNTY.	CLASS IV. — DEVELOPMENTAL DISEASES.																CLASS V. — VIOLENT DEATHS.																			Grand Total for All Classes.			
	ORDER 1.— Of Children.								ORDERS 2, 3, AND 4.								ORDER 1.— Accident and Negligence.										ORDERS 3, 4, AND 5.													
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total.		Childbirth.	Old Age.		Atrophy and Debility.		Total for Class IV.			Railroad Accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total.		Suicide.		Violent, not classed.		Cause not reported.		Total for Class V.			Males.	Females.	Not stated.	Total.
							M	F		M	F	M	F	Male.	Female.	Total.									M	F	M	F	M	F	M	F	Male.	Female.	Total.				
Alexandria	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	....	3	..	3
Ashland	..	..	..	..	..	..	..	..	..	1	3	..	..	1	3	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	4	9	..	13
Bath	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	1	7	..	8
Benton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....	....	..	....
Bethlehem	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1		..	..	..	..	..	..	1	1	..	..	..	..	..	2	2	3	2	5	9	7	..	16
Bridgewater	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	8	2	..	10
Bristol	..	..	..	..	..	..	..	..	..	..	3	..	..	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	10	14	..	24
Campton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	2	2	4	6	9	..	15
Canaan	..	1	..	..	..	..	1	..	..	2	3	..	..	3	3	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	2	15	20	..	35
Dorchester	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	4	..	6
Easton	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	3	..	5
Ellsworth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	4	..	6
Enfield	2	..	..	..	..	..	2	..	..	1	2	..	..	3	2	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	13	14	..	27
Franconia	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	1	..	..	..	..	..	1	..	..	..	..	..	1	..	2	..	2	3	4	..	7
Grafton	2	..	1	..	..	..	2	1	..	..	..	1	..	3	1	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	8	9	..	17
Groton	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	5	7	..	12
Hanover	1	..	..	..	..	..	..	1	..	1	..	..	1	1	2	3	.	1	..	1	..	..	..	..	2	..	..	..	..	..	..	..	2	..	2	9	18	..	27
Haverhill	..	..	..	..	..	..	..	..	..	10	5	..	..	10	5	15	1	..	..	..	..	..	..	2	3	..	..	..	..	..	1	2	4	2	6	27	18	1	46
Hebron	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	....	3	..	3

Holderness	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	1	6	5	..	11
Landaff	..	..	..	..	1	..	..	1	..	1	..	..	1	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	2	2	7	..	9
Lebanon	1	..	..	..	1	..	..	2	1	2	6	3	..	5	9	14	1	..	..	..	..	..	..	2	3	..	..	..	..	..	..	1	3	1	4	33	33	..	66
Lincoln	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lisbon	..	..	..	..	..	..	..	..	..	2	2	1	..	3	2	5	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	2	1	2	3	12	9	..	21
Littleton	..	..	..	1	..	..	..	1	..	3	..	1	..	4	1	5	..	1	..	..	..	..	1	2	1	3	..	..	..	..	1	1	2	4	6	24	26	..	50
Livermore	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lyman	..	..	..	..	..	..	..	..	..	1	2	..	..	1	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	5	4	..	9
Lyme	..	..	..	..	..	..	..	..	1	2	..	..	..	2	1	3	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	8	10	..	18
Monroe	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	5	2	..	7
Orange	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	4
Orford	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	7	8	..	15
Piermont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	1	1	2	5	12	..	17
Plymouth	..	..	..	..	..	..	..	..	..	..	5	..	..	..	5	5	1	..	..	..	..	..	..	2	3	..	..	..	..	..	1	..	4	..	4	20	14	..	34
Rumney	1	..	..	..	..	..	..	1	..	..	2	..	..	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	9	12	..	21
Thornton	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	3	..	9
Warren	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	1	..	..	..	..	..	..	1	2	..	..	..	..	..	1	..	3	..	3	8	3	..	11
Waterville	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Wentworth	..	..	..	..	..	..	..	..	..	4	2	1	..	5	2	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	2	15	8	1	24
Woodstock	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	1	2	2	..	4

TABLE 13 — *continued.*

Towns in Coös County.	CLASS I. — ZYMOTIC DISEASES.																																	
	Order 1. — Miasmatic.																			Order 2. — Enthetic.							Order 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro spinal Meningitis.	Total.		Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total.		Alcoholism.	Privation and Neglect.	Total.		Male.	Female.	Sex not stated.	Total.
																			M	F						M	F			M	F				
Berlin	..	..	1	1	..	..	..	..	..	..	..	..	3	..	1	..	..	..	4	2	1	..	..	..	..	..	1	..	..	..	..	4	3	..	7
Carroll	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Clarksville	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colebrook	..	..	..	..	..	1	..	3	..	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	1	3	..	4
Columbia	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Dalton	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3
Dummer	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Errol	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gorham	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Jefferson	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Lancaster	..	..	..	..	..	..	..	1	1	..	..	..	6	..	1	..	..	..	3	6	..	..	..	..	..	..	..	..	..	..	..	3	6	..	9
Milan	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Northumberland	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Pittsburg	..	..	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Randolph	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Shelburne	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stark	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3
Stratford	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3
Stewartstown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..	..	1	..	..	..	..	..	1	1	..	2
Whitefield	..	..	..	..	..	..	..	..	..	..	..	..	3	..	1	..	..	1	1	4	1	..	..	..	..	1	..	..	..	..	..	2	4	..	6

Towns in Coös County.	CLASS II. — CONSTITUTIONAL DISEASES.																CLASS III. — LOCAL DISEASES.																								
	Order 1. — Diathetic.							Order 2. — Tubercular.						Total for Cl. II.			Order 1. — Nervous System.												Orders 2 and 3.												
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total. M	Total. F	Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total. M	Total. F	Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total. M	Total. F	Heart disease.	Aneurism.	Pericarditis.	Total. M	Total. F	Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total. M	Total. F
Berlin	..	..	..	..	..	..	..	..	..	2	..	2	..	2	..	2	..	..	..	..	..	..	4	..	..	..	3	1	..	..	..	..	..	..	..	2	..	..	..	1	1
Carroll	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Clarksville	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colebrook	1	..	..	..	..	..	1	..	..	4	1	3	2	3	3	6	..	1	..	..	..	..	1	..	..	..	2	..	1	..	..	1	..	..	..	1	..	..	..	1	..
Columbia	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	1	..	..	1	..	..	..	1	..
Dalton	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	1	..	..	..	1	..	..	..	1	..
Dummer	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Errol	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..
Gorham	..	..	..	..	..	..	..	..	..	2	..	1	1	1	1	2	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	1	..	..	..	4	..	..	..	3	1
Jefferson	1	..	1	..	..	1	1	..	..	1	1	1	1	2	2	4	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..
Lancaster	..	..	1	..	..	1	..	..	..	6	..	1	5	2	5	7	1	..	..	..	..	..	..	..	..	..	..	1	3	..	..	2	1	..	..	4	..	..	..	1	3
Milan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	..	..	2	1	1	..	..	1	..	..	..	..	..	..	..	..	..
Northumberland	..	..	1	..	..	..	1	..	..	2	..	1	1	1	2	3	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pittsburg	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Randolph	2	..	..	..	..	..	2	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Shelburne	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	2	..	..	..	1	1
Stark	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..
Stratford	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stewartstown	..	..	1	..	..	1	..	..	..	1	..	..	1	1	1	2	..	1	..	..	..	1	..	..	..	..	1	1	4	..	..	4	..	..	..	..	..	..	..	..	..
Whitefield	..	..	..	..	..	..	..	..	..	5	..	3	2	3	2	5	..	1	..	1	..	1	1	..	..	..	2	2	1	..	..	1	..	..	1	2	..	..	..	3	..

TABLE 13 — *continued.*

Towns in Coös County.	CLASS III. — LOCAL DISEASES — *continued.*																																											
	Order 4. — Digestive Organs.																	Order 5. — Urinary Organs.										Order 6. — Generative Organs.					Order 8. — Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total.		Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total.		Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total.		Male.	Female.	Sex not stated.	Total.
																M	F									M	F											M	F				
Berlin	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	2	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	6	3	..	9
Carroll	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Clarksville	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Colebrook	..	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	3	..	..	..	1	..	..	1	..	1	1	..	..	..	..	..	..	1	..	..	..	..	1	5	5	..	10
Columbia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	.	4
Dalton	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1		5
Dummer	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
Errol	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Gorham	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	8	1	..	9
Jefferson	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Lancaster	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	5	5	..	10
Milan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	..	4
Northumberland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2
Pittsburg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Randolph	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Shelburne	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	4
Stark	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
Stratford	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
Stewartstown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	1	..	6
Whitefield	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	8	3	..	11

TOWNS IN COÖS COUNTY.	CLASS IV. — DEVELOPMENTAL DISEASES.																CLASS V. — VIOLENT DEATHS.																			Grand Total for All Classes.			
	ORDER 1.—Of Children.								ORDERS 2, 3, AND 4.								ORDER 1. — Accident and Negligence.										ORDERS 3, 4, AND 5.												
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total.		Childbirth.	Old Age.		Atrophy and Debility.		Total for Class IV.			Railroad Accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total.		Suicide.		Violent, not classed.		Cause not reported.		Total for Class V.			Males.	Females.	Not stated.	Total.
							M	F		M	F	M	F	Male.	Female.	Total.									M	F	M	F	M	F	M	F	Male.	Female.	Total.				
Berlin	..	..	..	..	..	1	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	13	6	..	19
Carroll	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	....
Clarksville	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	1	..	2
Colebrook	..	1	..	..	..	..	..	1	..	1	1	..	..	1	2	3	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	1	1	1	2	11	14	..	25
Columbia	..	1	..	..	..	..	1	..	..	..	1	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	5	4	..	9
Dalton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	6	3	..	9
Dummer	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	1	..	3
Errol	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	1	2	..	3
Gorham	..	1	..	..	..	1	1	1	..	..	..	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	11	3	..	14
Jefferson	..	..	..	..	..	..	..	..	1	..	2	..	..	..	3	3	..	1	..	..	..	..	..	..	1	..	..	..	..	..	1	..	2	..	2	6	7	..	13
Lancaster	..	..	..	..	..	..	..	..	..	2	1	1	2	3	3	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	13	20	..	33
Milan	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	1	1	1	2	5	3	..	8
Northumberland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	1	..	2	2	4	6	..	10
Pittsburg	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	3	..	5
Randolph	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	...	2	..	2
Shelburne	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	3	..	5
Stark	1	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	2	4	4	1	9
Stratford	..	..	..	..	..	..	..	..	..	1	1	1	..	2	1	3	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	1	2	5	6	..	11
Stewartstown	1	..	..	..	..	..	..	1	..	1	1	1	..	2	2	4	..	..	..	..	..	3	..	..	3	..	..	..	..	..	..	..	3	..	3	12	5	..	17
Whitefield	4	..	..	..	..	..	3	1	..	1	1	..	..	4	2	6	..	..	..	1	..	..	..	..	1	..	..	..	..	..	1	..	2	..	2	18	11	1	30

TABLE 13 — *continued.*

Recapitulation by Counties.	Class I. — Zymotic Diseases.																																	
	Order 1. — Miasmatic.																			Order 2. — Enthetic.							Order 3. Dietic.				Total for Class I.			
	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Quinsy.	Croup.	Whooping-cough.	Typhoid Fever.	Erysipelas.	Puerperal Fever.	Carbuncle.	Influenza.	Dysentery.	Diarrhœa.	Cholera Infantum.	Malaria Fever.	Rheumatism.	Cerebro-spinal Meningitis.	Total.		Septicæmia.	Syphilis.	Malignant Pustule.	Thrush.	Worms.	Total.		Alcoholism.	Privation and Neglect.	Total.		Male.	Female.	Sex not stated.	Total.
																			M	F						M	F			M	F				
Rockingham	..	..	3	16	..	12	2	18	4	2	1	..	2	10	20	..	3	2	41	54	5	..	..	..	1	3	3	5	..	5	..	47	57	2	106
Strafford	..	2	6	5	..	14	3	12	1	1	..	..	6	5	29	..	2	1	40	47	3	..	..	..	..	1	2	5	1	4	2	45	51	..	96
Belknap	..	1	2	2	..	8	..	9	..	..	..	..	..	3	4	..	2	....	13	18	1	1	..		..	1	1	..	..	..	..	14	19	..	33
Carroll	..	..	..	2	..	1	..	8	..	2	..	..	1	2	5	..	..	....	12	9	1	1	..	..	..	1	1	..	..	..	..	13	10	..	23
Merrimack	..	2	4	6	..	12	..	15	5	4	1	..	3	7	14	..	2	4	38	41	9	..	..	..	..	4	5	1	..	1	..	43	46	..	89
Hillsborough	2	39	28	30	..	19	18	37	7	7	2	2	7	22	112	1	8	7	174	174	8	..	..	..	..	3	5	..	..	..	..	177	179	..	356
Cheshire	..	..	2	3	..	3	1	14	..	2	..	1	3	5	14	1	2	...	24	27	1	..	..	1	..	1	1	..	..	..	..	24	28	1	53
Sullivan	..	1	..	..	..	2	..	4	2	..	..	..	1	2	4	..	4	....	8	12	2	..	..	..	..	2	..	..	..	..	..	10	12	..	22
Grafton	..	..	7	10	1	1	..	11	2	1	..	3	3	1	12	..	5	3	35	25	5	..	1	..	..	4	2	..	..	..	..	39	27	..	66
Coös	..	..	1	2	..	2	1	8	4	1	..	..	14	2	5	..	..	3	16	27	3	..	..	..	..	2	1	..	..	..	..	18	28	..	46
Total for State	2	45	53	76	1	74	25	136	25	20	4	6	40	59	219	2	28	20	401	434	38	2	1	1	1	22	21	11	1	10	2	430	457	3	890

Recapitulation by Counties.	CLASS II. — CONSTITUTIONAL DISEASES.																	CLASS III. — LOCAL DISEASES.																								
	Order 1. — Diathetic.							Order 2. — Tubercular.						Total for Class II.			Order 1. — Nervous System.												Orders 2 and 3.													
	Dropsy.	Anæmia.	Cancer.	Noma (Canker).	Mortification.	Total.		Scrofula.	Tabes Mesenterica.	Phthisis.	Hydrocephalus.	Total.		Male.	Female.	Total.	Apoplexy.	Paralysis.	Insanity.	Epilepsy.	Tetanus.	Convulsions.	Meningitis.	Brain disease.	Spinal disease.	Neuralgia.	Total.		Heart disease.	Aneurism.	Pericarditis.	Total.		Lung disease.	Bronchitis.	Pneumonia.	Pleurisy.	Laryngitis.	Asthma.	Total.	
						M	F					M	F														M	F				M	F							M	F
Rockingham	12	2	34	1	4	20	33	2	..	133	3	61	77	81	110	191	41	50	2	4	1	8	17	24	3	1	67	84	81	1	..	43	39	1	19	63	2	1	2	41	47
Strafford	10	1	18	..	3	11	21	4	..	96	3	41	62	52	83	135	24	18	3	4	..	6	19	8	3	..	42	43	45	..	..	18	27	3	16	48	1	1	1	35	35
Belknap	9	1	14	..	1	10	15	1	..	50	1	26	26	36	41	77	10	17		1	..	1	10	3	.	..	19	23	24	.	..	16	8	..	...	24	..	..	..	8	16
Carroll	6	1	11	..	4	8	14	..	2	33	1	15	21	23	35	58	7	11	1	5	..	5	9	15	2	..	29	26	21	..	..	13	8	..	3	27	..	..	2	17	15
Merrimack	12	7	27	1	3	20	30	1	..	102	3	48	58	68	88	156	26	49	13	1	..	12	12	21	2	..	63	73	71	1	..	41	31	4	13	72	2	3	3	53	44
Hillsborough	20	10	50	1	5	34	52	10	..	233	8	112	139	146	191	337	44	57	3	2	..	39	28	27	1	1	102	100	122	1	..	54	69	4	45	128	5	..	3	77	108
Cheshire	5	4	13	3	3	10	18	..		75	1	28	48	38	66	104	14	23	2	1	..	8	6	3		..	30	27	35	..	..	18	17	1	5	52	..	..	..	29	29
Sullivan	2	2	12	..	..	6	10	2	..	36	2	23	17	28	28	56	20	10	2	1	..	1	4	7	2	..	29	18	29	..	..	14	15	..	4	22	..	..	1	14	13
Grafton	10	4	29	1	1	21	24	1	..	71	1	31	42	52	66	118	18	37	1	1	..	10	20	11	1	..	44	55	49	..	2	25	26	1	6	48	..	..	1	23	33
Coös	4	..	4	..	..	3	5	1	..	28	2	14	17	17	22	39	2	6	..	1	..	3	8	3	..	..	13	10	12	..	1	11	2	..	1	20	..	..	..	15	6
Total for State	90	32	212	7	24	143	222	22	2	857	25	399	507	541	730	1271	206	278	27	21	1	93	133	122	14	2	438	459	489	3	3	253	242	14	112	504	10	5	13	312	346

TABLE 13—*continued.*

RECAPITULATION BY COUNTIES.	CLASS III.—LOCAL DISEASES—*continued.*																																											
	ORDER 4.—Digestive Organs.																	ORDER 5.—Urinary Organs.										ORDER 6.—Generative Organs.					ORDER 8.—Integumentary System.							Total for Class III.			
	Gastritis.	Enteritis.	Peritonitis.	Ascites.	Ulceration of intestines	Hernia.	Intussusception.	Stricture intestines.	Fistula.	Stomach disease.	Colic.	Hepatitis.	Jaundice.	Liver disease.	Disease of spleen.	Total.		Nephritis.	Bright's disease.	Diabetes.	Calculus.	Cystitis.	Kidney disease.	Uræmia.	Prostatitis.	Total.		Ovarian dropsy.	Ovarian tumor.	Uterine tumor.	Disease of uterus.	Total.	Ulcer.	Phlegmon.	Joint disease.	Disease of skin.	Tumor.	Total.		Male.	Female.	Sex not stated.	Total.
																M	F									M	F											M	F				
Rockingham	4	3	9	..	3	4	..	2	1	6	..	3	3	9	..	24	23	1	13	2	..	2	3	..	1	12	10	.	..	1	1	2	1	4	1	2	4	6	6	193	211	..	404
Strafford	1	8	2	1	2	2	..	..	..	2	..	..	1	6	1	13	13	5	9	..	2	2	3	2	..	12	11	..	..	..	2	2	2	..	2	..	..	3	1	121	132	2	255
Belknap	6	1	2	1	..	..	..	..	..	..	..	2	..	1		4	9	..	5	..	..	..	4	..	..	4	5	..	..	..	1	1	..	3	1	..	.	4	..	55	62	..	117
Carroll	2	3	2	..	1	..	..	1	..	3	.	..	1	8	..	14	7	1	4	2	..	..	5	..	..	7	5	..	2	1	..	3	..	1	1	..	1	1	2	81	66	..	147
Merrimack	3	5	6	2		..		1	..	3		3	1	8	..	17	15	4	22	5	..	4	3	1	..	25	14	3	..	..		3	2	1	..	2	3	4	4	203	184	.	387
Hillsborough	15	17	12	1	1	1	2	2	.	3	4	2	2	15	.	29	48	6	25	4	1	2	8	1	..	33	14	..	2	..	2	4	2	7	..	..	1	7	3	298	346	4	648
Cheshire	4	7	1	..	1	2		2	.	1	..	1	2	2	..	15	8	..	6	3	..	5	..		..	11	3	..	1	..	..	1	..	..	..	..	1	..	1	102	86	1	189
Sullivan	4	4	2	..	..	..	..	1	..	2	..	2	.	2	..	8	9	..	9	2	1	..	2	..	..	11	3	..	..	..	..	..	..	..	..	1	..	1	..	77	58	..	135
Grafton	8	8	5	..	..	..	..	4	..	1	..	4	1	9	..	21	19	2	5	2	..	3	1	3	..	11	5	..	..	1	..	1	1	2	..	..	2	2	3	125	142	1	268
Coös	2	1	3	..	..	2	..	..	..	1	..	..	..	3	..	8	4	..	8	3	1	1	3	1	..	12	5	..	..	..	..	..	..	1	..	..	..	..	1	59	28	..	87
Total for State	49	57	44	5	8	11	2	13	1	22	4	17	11	63	1	153	155	19	106	23	5	19	32	8	1	138	75	3	5	3	6	17	8	19	5	5	12	28	21	1314	1315	8	2637

RECAPITULATION BY COUNTIES.	CLASS IV. — DEVELOPMENTAL DISEASES.																CLASS V. — VIOLENT DEATHS.																			Grand Total for All Classes.			
	ORDER 1.— Of Children.								ORDERS 2, 3, AND 4.								ORDER 1.— Accident and Negligence.										ORDERS 3, 4, AND 5.												
	Still-born.	Premature Birth.	Cyanosis.	Spina Bifida.	Malformation.	Teething.	Total.		Childbirth.	Old Age.		Atrophy and Debility.		Total for Class IV.			Railroad Accidents.	Fractures.	Wounds.	Burns and Scalds.	Poison.	Drowning.	Suffocation.	Otherwise.	Total.		Suicide.		Violent, not classed.		Cause not reported.		Total for Class V.			Males.	Females.	Not stated.	Total.
							M	F		M	F	M	F	Male.	Female.	Total.									M	F	M	F	M	F	M	F	Male.	Female.	Total.				
Rockingham	15	4	..	..	3	..	13	9	4	26	54	10	10	49	77	126	3	4	..	3	2	3	..	11	19	7	..	1	..	..	24	33	43	41	84	410	496	5	911
Strafford	16	5	3	..	1	1	8	18	2	13	20	12	8	33	48	81	1	1	1	3	1	1	5	5	12	6	1	..	..	..	18	15	31	21	52	276	335	8	619
Belknap	3	7	..	..	..	..	8	2	..	11	8	1	4	20	14	34	2	2	..	2	..	5	..	2	8	5	1	1	..	..	5	8	14	14	28	137	150	2	289
Carroll	...	3	..	..	1	..	3	1	3	6	9	1	2	10	15	25	1	1	..	1	1	..	..	3	4	3	1	..	..	..	2	6	7	9	16	134	135	..	269
Merrimack	21	4	3	..	2	1	16	15	4	20	24	15	9	51	52	103	4	3	1	2	..	3	2	4	13	6	6	1	..	..	19	16	38	23	61	401	393	2	796
Hillsborough	64	9	1	..	3	7	59	25	8	31	44	28	32	118	109	227	1	1	1	7	1	12	1	14	23	15	4	1	..	..	46	44	73	60	133	783	885	33	1701
Cheshire	6	2	..	..	..	1	8	1	3	16	31	10	8	34	43	77	2	4	2	3	1	3	1	8	18	6	6	1	..	..	18	22	42	29	71	238	252	4	494
Sullivan	7	1	2	..	..	1	7	4	3	16	10	1	..	24	17	41	..	4	..	..	1	4	..	5	8	6	5	1	..	..	2	9	15	16	31	152	131	1	284
Grafton	7	1	1	1	2	..	5	7	3	35	40	8	2	48	52	100	4	4	1	1	..	..	1	13	18	6	2	..	..	..	13	20	33	26	59	296	313	2	611
Coös	6	3	..	..	..	2	7	4	1	7	9	3	3	17	17	34	..	1	1	2	..	4	..	1	8	1	..	..	1	..	3	8	12	9	21	121	104	2	227
Total for State	145	39	10	1	12	13	134	86	31	181	249	89	78	404	444	848	18	25	7	24	7	35	10	66	131	61	26	6	1	..	150	181	308	248	656	2948	3194	59	6201

TABLE 14.

RECAPITULATION OF THE CAUSES OF DEATH BY CLASSES AND ORDERS, BY COUNTIES.

CAUSES OF DEATH.	Rockingham.	Strafford.	Belknap.	Carroll.	Merrimack.	Hillsborough.	Cheshire.	Sullivan.	Grafton.	Coös.	Total for State.
All causes	911	619	289	269	796	1,701	494	284	611	227	6,201
Specified causes	854	586	276	261	761	1,611	454	273	578	216	5,870
Cause not stated	57	33	13	8	35	90	40	11	33	11	331
CLASSES.											
I — Zymotic	106	96	33	23	89	356	53	22	66	46	890
II — Constitutional diseases	191	135	77	58	156	337	104	56	118	39	1,271
III — Local diseases	404	255	117	147	387	648	189	135	268	87	2,637
IV — Developmental diseases	126	81	34	25	103	227	77	41	100	34	848
V — Violent deaths.	84	52	28	16	61	133	71	31	59	21	656
ORDERS.											
I — 1. Miasmatic diseases	95	87	31	21	79	348	51	20	60	43	835
2. Enthetic diseases	6	3	2	2	9	8	2	2	6	3	43
3. Dietic diseases	5	6	....	....	1	.....	....	....	....	....	12
II — 1. Diathetic diseases	53	32	25	22	50	86	28	16	45	8	365
2. Tubercular diseases	138	103	52	36	106	251	76	40	73	31	906
III — 1. Diseases of nervous system	151	85	42	55	136	202	57	47	99	23	897
2. Diseases of organs of circulation	82	45	24	21	72	123	35	29	51	13	495
3. Diseases of respiratory organs.	88	70	24	32	97	185	58	27	56	21	658
4. Diseases of digestive organs	47	26	13	21	32	77	23	17	40	12	308
5. Diseases of urinary organs	22	23	9	12	39	47	14	14	16	17	213
6. Diseases of generative organs	2	2	1	3	3	4	1	....	1	...	17
7. Diseases of integumentary system	12	4	4	3	8	10	1	1	5	1	49
IV — 1. Developmental diseases of children	22	26	10	4	31	84	9	11	12	11	220
2. Childbirth	4	2	....	3	4	8	3	3	3	1	31
3. Old age	80	33	19	15	44	75	47	26	75	16	430
4. Atrophy and debility	20	20	5	3	24	60	18	1	10	6	167
V — 1. Accident and negligence	26	18	13	7	19	38	24	14	24	9	192
2. Homicide	....	....	....	....	....	.....	....	....	....	....	...
3. Suicide	1	1	2	1	7	5	7	6	2	...	32
4. Violent, not classed	....	....	...	....	....	.....	...	....	....	1	1

TABLE 15.

DEATHS BY AGES, SEX, AND MONTHS,—BY COUNTIES AND TOWNS.

Towns in Rockingham County.	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Atkinson,																													
Males	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	3	...
Females	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	2	5
Auburn,																													
Males	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	2	..
Females	..	..	..	..	1	..	2	..	3	..	..	..	..	..	1	1	..	..	1	1	..	..	..	..	1	1	..	6	8
Brentwood,																													
Males	1	1	..	2	1	2	3	2	2	5	..	..	..	..	1	2	2	..	3	3	..	4	..	2	1	1	..	19	...
Females	1	2	..	1	1	2	3	1	3	4	2	..	..	..	..	1	1	4	..	3	..	1	2	2	3	3	..	20	39
Candia,																													
Males	1	..	..	..	2	..	2	2	3	2	2	..	..	..	1	..	..	3	..	2	1	..	..	3	1	3	..	14	...
Females	5	..	..	1	1	..	1	2	.	3	2	1	..	..	..	..	5	..	2	1	..	..	4	2	1	1	..	16	30
Chester,																													
Males	..	..	..	..	..	1	..	1	3	1	1	..	..	..	1	..	1	2	..	1	..	..	..	..	1	1	..	7	...
Females	1	..	..	..	1	1	..	2	..	1	4	..	..	..	1	2	1	..	2	2	..	1	..	1	..	..	..	10	17
Danville,																													
Males	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	3	...
Females	..	..	..	..	..	..	1	..	2	..	4	..	..	..	..	1	1	..	2	..	1	..	1	1	..	..	..	7	10
Deerfield,																													
Males	3	1	..	..	1	..	..	..	5	3	3	..	..	1	1	1	1	2	2	1	1	2	..	3	2	1	..	17	...
Females	..	..	..	1	1	1	..	1	1	5	2	1	..	1	1	..	2	..	1	1	3	1	4	..	..	1	..	14	31
Derry,																													
Males	1	..	..	1	2	3	..	..	4	3	2	..	..	..	..	1	2	3	2	1	..	1	3	2	1	..	..	16	...
Females	..	2	..	2	6	..	1	3	4	6	3	..	..	1	4	3	2	3	..	1	2	1	2	4	1	5	..	28	44
East Kingston,																													
Males	..	1	..	..	..	..	..	..	..	2	..	..	..	..	1	1	..	..	..	..	..	..	1	..	..	..	..	3	...
Females	.	1	..	1	1	..	..	..	1	1	1	..	..	..	..	..	1	1	..	3	1	..	..	..	..	..	..	6	9
Epping,																													
Males	4	..	1	..	..	3	1	1	4	7	2	..	..	..	4	1	2	3	1	..	2	3	..	4	2	1	..	23	...
Females	2	..	..	..	2	2	2	..	3	3	3	..	..	..	1	3	2	2	2	1	..	2	1	1	1	1	..	17	40
Exeter,																													
Males	4	1	..	1	1	..	2	1	3	1	1	..	..	..	1	1	..	2	..	..	1	6	2	..	..	2	..	15	...
Females	2	2	..	1	1	2	1	5	4	5	10	1	..	1	3	3	5	3	3	3	4	4	2	2	1	2	..	35	50
Fremont,																													
Males	..	..	..	..	..	..	1	1	2	1	1	..	..	..	1	..	..	1	1	1	..	..	..	1	1	..	..	6	...
Females	..	..	..	1	..	..	..	..	2	1	..	..	..	..	1	1	..	..	..	..	..	1	.	..	1	..	.	4	10
Greenland,																													
Males	..	..	..	..	1	..	..	..	..	1	..	..	..	2	1	1	..	..	..	..	..	1	..	..	1	..	..	4	...
Females	1	..	..	..	..	..	1	..	2	2	..	..	..	1	1	..	2	..	..	..	..	2	..	1	1	..	..	7	11
Hampstead,																													
Males	..	..	..	..	1	..	..	1	..	5	..	1	..	1	1	1	..	1	..	3	..	..	..	1	1	1	..	9	...
Females	1	1	..	..	..	..	2	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	1	1	..	..	5	...
Not stated	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	15
Hampton,																													
Males	3	..	..	..	..	..	1	1	2	3	2	..	..	..	..	..	1	1	3	..	..	1	3	..	..	3	..	12	...
Females	..	..	1	..	..	..	1	1	..	1	2	..	..	1	1	..	..	2	1	..	..	..	1	..	1	1	..	7	19
Hampton Falls																													
Males	..	..		..	..	1	..	..	1	..	1	..	..	..	..	.	..	..	2	..	1	..	..	..	..	..	..	3	...
Females	..	..	..	..	..	2	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..	..	..	..	1	..	..	3	...
Not stated	1	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	7
Kensington,																													
Males	1	..		.	..	1	2	2	1	3	.	..	..	..	1	..	1	1	..	1	..	4	2	..	..	..	..	10	...
Females	..	..	..	1	1	1	..	..	..	..	..	..	..	.	..	..	1	1	1	..	..	..	..	..	..	..	..	3	13
Kingston,																													
Males	1	1	..	..	..	1	2	..	3	2	..	..	..	1	..	1	1	3	..	2	..	..	1	1	2	..	..	11	...
Females	..	..	..	1	1	1	2	2	..	2	1	..	..	..	..	..	1	1	3	1	2	..	..	2	..	..	..	10	21
Londonderry,																													
Males	..	..	..	..	..	1	1	..	1	3	1	..	..	..	1	..	..	..	1	1	..	1	1	.	2	..	..	7	...
Females	..	1	..	.	1	2	..	1	1	4	3	..	..	..	1	3	2	1	..	..	..	1	1	1	2	1	..	13	20

TABLE 15 — *continued.*

Towns in Rockingham County — *continued.*	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Newcastle,																													
Males	1	..	..	..	..	..	1	..	..	2	1	..	..	..	..	..	1	..	..	..	1	..	2	..	1	..	..	5	...
Females	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	2	7
Newington,																													
Males	1	1	..	..	..	1	..	..	1	..	1	..	..	..	2	..	..	1	..	..	1	..	..	..	..	1	..	5	..
Females	..	..	..	..	..	..	1	..	1	1	1	..	..	..	..	..	..	1	..	..	1	..	1	..	1	..	..	4	9
Newmarket,																													
Males	7	7	3	1	2	1	2	1	..	3	1	..	..	1	2	1	1	3	2	1	3	1	1	5	5	4	..	29	...
Females	4	3	1	..	5	..	6	2	1	4	4	..	..	..	1	1	7	7	2	1	2	1	..	1	1	6	..	30	59
Newton,																													
Males	..	..	..	1	..	1	..	2	2	..	1	..	..	..	..	..	..	1	..	2	..	..	1	..	1	2	..	7	...
Females	2	1	..	..	1	..	1	..	1	1	1	..	..	..	1	1	..	1	..	..	..	2	1	..	2	..	..	8	15
N. Hampton,																													
Males	..	..	..	..	1	..	..	..	1	1	2	..	..	..	..	1	..	..	1	1	..	..	..	1	..	1	..	5	...
Females	..	..	..	..	1	..	..	..	1	1	2	..	..	..	..	..	..	..	1	..	1	1	..	1	1	..	..	5	...
Not stated	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	11
Northwood,																													
Males	2	1	..	1	1	..	1	..	3	3	1	..	..	..	..	..	1	4	1	2	1	..	2	..	1	1	..	13	...
Females	1	..	..	..	1	1	1	1	1	1	2	..	..	1	..	1	2	..	1	1	1	..	1	2	1	..	..	10	23
Nottingham,																													
Males	..	..	1	..	2	..	..	..	..	..	1	..	..	..	1	..	..	1	..	..	..	..	2	..	..	..	..	4	...
Females	..	..	..	1	1	2	1	..	..	2	1	1	..	1	2	1	..	1	2	1	..	..	2	..	..	1	..	10	14
Plaistow,																													
Males	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	2	...
Females	..	..	..	..	..	..	..	..	1	1	4	..	..	1	1	..	2	1	1	..	..	..	..	1	1	..	..	7	9
Portsmouth,																													
Males	16	2	5	1	6	10	14	11	16	8	9	..	..	3	13	14	11	4	9	4	7	8	5	9	7	10	..	101	...
Females	12	12	5	6	9	10	12	12	11	26	16	..	..	4	10	14	11	12	14	12	6	12	12	12	10	10	..	135	...
Not stated	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	2	238
Raymond,																													
Males	..	1	..	..	1	1	..	..	1	3	..	..	..	..	..	..	1	..	1	1	2	..	1	..	1	..	..	7	...
Females	2	2	..	..	..	..	1	..	1	3	..	..	..	..	..	1	1	1	3	..	..	..	2	..	..	1	..	9	16
Rye,																													
Males	2	..	..	..	..	..	..	1	2	1	..	..	..	..	..	..	2	..	..	..	..	1	1	1	..	1	..	6	...
Females	2	..	1	..	..	2	2	1	1	1	2	1	..	..	..	2	..	1	..	1	1	1	2	3	..	2	..	13	19
Salem,																													
Males	1	..	..	..	1	1	..	2	2	6	..	..	..	..	1	4	1	1	1	..	1	..	..	2	1	1	..	13	...
Females	1	..	..	1	2	..	1	1	2	1	1	2	..	1	2	..	1	1	2	..	2	1	1	1	..	2	..	13	26
Sandown,																													
Males	..	..	..	1	..	..	..	..	..	2	..	..	..	..	1	..	..	1	..	1	..	..	..	..	..	..	..	3	...
Females	..	..	..	..	..	..	..	..	..	3	1	1	..	..	..	..	1	..	..	..	1	1	..	2	..	..	..	5	8
Seabrook,																													
Males	2	1	..	..	..	..	1	2	..	2	1	..	..	..	2	2	2	..	..	..	..	..	1	..	..	2	..	9	...
Females	2	3	..	..	..	1	1	1	..	4	..	..	..	..	..	..	..	..	..	3	2	1	1	..	1	4	..	12	21
S. Hampton,																													
Males	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	3	...
Females	..	..	..	..	1	..	..	..	1	1	2	..	..	..	..	..	..	..	..	2	1	..	1	..	1	..	..	5	8
S. Newmarket,																													
Males	2	..	1	..	..	..	..	1	..	..	2	..	..	..	..	1	3	..	..	..	1	..	1	..	..	..	..	6	...
Females	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..	..	..	3	9
Stratham,																													
Males	..	..	1	1	..	1	..	..	..	..	..	..	..	1	..	..	1	..	1	..	..	1	1	..	..	..	..	4	...
Females	..	..	..	..	1	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	2	6
Windham,																													
Males	..	..	..	..	..	1	1	..	..	1	1	..	..	..	..	..	..	1	1	..	..	1	..	..	..	..	1	4	...
Females	..	..	..	2	1	1	..	1	1	..	3	1	..	..	2	..	3	1	..	2	..	1	..	1	..	..	..	10	14

TABLE 15— *continued.*

Towns in Strafford County.	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Barrington,																													
Males.......	1	..	..	1	..	..	1	..	2	4	1	..	..	..	..	2	..	..	2	1	..	..	..	1	2	..	2	10	...
Females....	3	..	1	..	..	..	..	..	..	2	1	..	..	..	..	1	2	..	..	2	..	..	..	..	1	..	1	7	17
Dover,																													
Males......	29	13	2	3	9	7	12	15	18	20	4	..	..	1	8	12	13	10	14	16	8	12	10	14	9	7	..	133	...
Females....	29	12	8	11	15	18	15	12	15	13	14	1	..	2	15	21	19	12	8	13	14	18	11	13	10	11	..	165	...
Not stated..	..	..	1	..	..	..	..	3	..	..	..	..	..	1	..	2	..	..	..	..	..	1	..	1	..	1	..	5	303
Durham,																													
Males.......	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	...
Females	1	..	..	..	..	..	1	..	1	..	2	..	..	..	..	..	..	3	..	..	..	1	..	1	..	..	..	5	6
Farmington,																													
Males......	5	2	..	1	2	3	1	4	3	3	1	..	..	1	4	2	3	2	2	4	5	1	1	..	..	2	..	26	...
Females....	5	4	1	3	6	..	..	3	4	5	3	..	..	1	2	4	1	7	2	2	5	2	2	1	4	3	..	35	...
Not stated..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	62
Lee,																													
Males.......	..	..	..	..	..	..	..	1	1	2	..	..	..	..	..	1	..	2	..	..	1	..	..	..	..	..	..	4	...
Females	..	..	..	..	..	..	..	..	..	2	2	..	..	2	1	1	1	..	..	..	..	..	1	..	..	1	1	6	10
Madbury,																													
Males.......	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	3	...
Females......	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	3	6
Middleton,																													
Males.......	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1
Milton,																													
Males.......	..	..	..	1	..	..	..	1	2	..	3	1	..	..	..	..	1	2	1	1	1	..	..	1	1	..	..	8	...
Females	2	1	..	..	..	1	1	..	1	..	..	2	..	..	..	..	1	2	1	..	1	..	2	..	..	1	..	8	16
New Durham,																													
Males.......	1	..	..	..	..	1	1	2	..	..	..	..	..	..	..	..	1	1	..	..	3	..	..	..	..	..	..	5	...
Females	..	..	..	..	..	1	1	..	1	1	..	1	..	..	..	1	2	..	..	..	..	..	..	..	1	1	..	5	10
Rochester,																													
Males.......	2	4	2	1	3	1	2	..	1	4	3	..	..	1	..	3	2	2	1	2	4	4	1	5	..	..	..	24	...
Females....	2	2	2	2	1	2	3	3	3	10	1	..	..	..	2	4	7	2	2	3	4	2	2	1	2	..	..	31	...
Not stated..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	2	57
Rollinsford,																													
Males.......	5	3	..	..	..	2	1	..	..	..	..	..	..	..	1	3	2	1	1	..	1	1	1	..	..	..	..	11	...
Females ...	4	1	..	1	..	2	1	1	..	2	1	..	..	..	2	2	2	1	..	2	..	..	1	1	..	1	1	13	24
Somersworth,																													
Males.......	15	6	1	1	1	2	8	4	3	2	1	1	..	..	3	6	7	7	3	6	4	..	4	1	3	1	..	45	...
Females....	17	2	..	1	4	4	2	3	6	2	4	1	..	1	2	4	4	3	4	5	4	9	4	..	3	5	..	47	92
Strafford,																													
Males.......	1	1	..	..	..	1	..	1	1	..	..	..	..	1	1	2	..	1	..	..	..	..	..	..	1	1	..	6	...
Females	1	..	1	1	..	..	..	..	1	3	2	..	..	..	..	2	..	2	1	2	..	..	1	1	..	..	..	9	15

TABLE 15 — *continued.*

Towns in Belknap County.	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Alton,																													
Males	..	..	..	..	1	2	..	1	1	3	1	..	..	..	..	..	3	1	..	2	1	..	1	..	1	.	..	9	...
Females	1	..	..	..	1	1	..	..	1	2	2	..	..	..	..	1	..	2	1	..	1	3	..	..	..	..	.	8	17
Barnstead,																													
Males	2	..	..	..	..	.	1	..	2	2	2	..	..	..	1	..	1	1	..	2	..	2	..	1	..	1	..	9	...
Females	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	..	1	..	..	..	.	..	..	..	2	11
Belmont,																													
Males	..	..	..	..	3	1	..	2	2	3	..	1	..	..	1	2	..	1	2	1	1	1	1	..	2	..	..	12	...
Females	..	1	..	2	1	1	1	1	3	4	..	1	..	..	1	1	..	3	..	1	3	..	2	3	..	1	..	15	27
Center Harbor																													
Males	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	2	...
Females	..	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	3	5
Gilford,																													
Males	3	1	1	1	1	..	4	2	3	4	2	..	..	..	1	2	2	4	..	1	4	3	..	1	..	4	..	22	...
Females	6	..	1	1	2	2	2	2	2	2	5	..	..	1	2	1	9	1	1	3	2	..	2	4	1	..	..	26	48
Gilmanton,																													
Males	1	..	..	..	1	..	1	..	1	5	1	..	..	5	..	..	2	..	2	..	1	2	2	1	3	2	..	15	...
Females	1	..	..	..	1	..	1	1	..	4	3	..	..	1	1	..	4	2	1	..	..	2	..	..	2	..	..	12	27
Laconia,																													
Males	10	5	3	1	2	2	1	3	2	1	5	..	..	1	5	1	1	1	2	3	3	5	2	7	2	4	..	36	...
Females	4	6	..	6	2	..	..	3	3	7	5	1	..	3	4	1	5	5	5	1	2	3	6	3	1	4	..	40	...
Not stated..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	.	..	..	..	..	..	..	2	78
Meredith,																													
Males	2	..	..	..	..	..	3	2	1	3	2	1	..	..	1	1	2	..	..	1	2	2	..	..	4	1	..	14	...
Females	..	..	..	1	..	2	2	1	1	1	4	.	..	..	..	2	1	2	..	3	1	..	..	1	..	2	..	12	26
New Hampton																													
Males	1	..	..	..	..	..	..	..	1	1	..	1	..	..	1	..	..	..	1	1	..	..	..	..	1	..	..	4	...
Females	..	..	..	..	.	..	..	1	1	2	2	1	..	..	1	..	2	1	1	1	..	..	1	..	..	..	..	7	11
Sanbornton,																													
Males	..	..	..	1	1	..	..	3	2	2	1	..	..	..	..	..	4	..	2	1	..	..	..	1	1	1	..	10	...
Females	..	..	..	..	1	1	..	2	2	1	2	..	..	..	..	..	1	1	3	2	..	..	..	1	..	1	..	9	19
Tilton,																													
Males	..	1	..	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	1	..	1	1	..	..	..	4	...
Females	1	1	..	2	..	2	..	2	6	..	1	..	..	1	1	1	..	..	..	3	2	1	3	2	2	1	..	16	20

TABLE 15 — *continued.*

TOWNS IN CARROLL COUNTY.	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Albany,																													
Males								1										1										1	
Females	1			1						1							1						1	1				3	4
Bartlett,																													
Males				2		1				2											1		1		2	1		5	
Females	1		2	1				1	2	2					1		3		1			1			1	2		9	14
Brookfield,																													
Males					1	1						1					1		1	1								3	
Females		1									1					1										1		2	5
Chatham,																													
Males	1					1				1	1					1	1	1				1						4	
Females																													4
Conway,																													
Males	2	1			1	1	1	3	4	1	1	1			1	1	4	1	1		2	2	3	1				16	
Females	1			1	2	3	3	3	2	2					1	3	2	2			2		2	3	1	1		17	33
Eaton,																													
Males						1					1											1			1			2	
Females	2							1	1			1				2		1						2				5	7
Effingham,																													
Males					1			1	1		1							2				2						4	
Females	1	2				1	2			3				2			2	4		1	1	3						11	15
Freedom,																													
Males				1			2									1	1			1								3	
Females					1				1	1	1	1					1			1	1	1		1				5	8
Hart's Locat'n																													
Males																													
Females																													
Jackson,																													
Males									1								1											1	
Females								1											1									1	2
Madison,																													
Males		1			1	1		2		1	1					1		1			1	1			1	2		7	
Females		1			1		1													1	1				1			3	10
Moultonboro',																													
Males	2	1			1		1	2	3	2	2				1		1	1	1	1	1		2	3	1	2		14	
Females		2		1	1	1	2		1	3	1	1					3	2		2	1	1	2			2		13	27
Ossipee,																													
Males	1	1			3	1	1	4	1	1	5					2	3	1		4		1	3	1	1	2		18	
Females		1		1	1	1	1		1	3	5				3	2	3	1	1	1	1				1	1		14	32
Sandwich,																													
Males	1	2							3	4	2						1	1	3			1	2		2	2		12	
Females					2	3		1	1	2	3				2	2	1		2		1	2	1	1				12	24
Tamworth,																													
Males	1						1		1	3	1					2			1				1	1	1	1		7	
Females	1				1	1			1	2	1				1		2	1					1		1	1		7	14
Tuftonboro',																													
Males	3			1					2	4		1			1	1	4			2				2		1		11	
Females	1						1		1		2			1		1	1		1		1			2				6	17
Wakefield,																													
Males	1					1	1			2	3				1				3			2			1	1		8	
Females	2			1	1		1		1		1				1		1			1	1		2		1			7	15
Wolfeborough,																													
Males	1	1		1	1			1	4	4	3	1		1	2	3	1		2		1	4	2	1	1	1		18	
Females					4	1	2	4	2	3	3	1			2	1	1	6	1	2	1	1	2	1		2		20	38

TABLE 15 — *continued.*

TOWNS IN MERRIMACK COUNTY.	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Allenstown,																													
Males	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	1	..	1	..	3	...
Females	1	..	..	1	4	..	..	..	1	..	1	..	..	..	1	1	1	..	..	2	..	..	..	2	..	1	..	8	11
Andover,																													
Males	..	..	..	..	1	2	..	..	4	6	..	..	..	..	1	..	1	5	1	..	..	..	1	3	1	..	..	13	...
Females	2	..	..	..	..	..	..	2	2	1	4	1	..	..	..	1	3	1	3	2	..	1	..	..	1	..	..	12	25
Boscawen,																													
Males	..	..	..	1	..	1	2	..	1	4	5	..	..	..	2	1	1	1	..	..	1	1	1	2	4	..	..	14	...
Females	..	..	..	..	..	..	2	..	2	2	1	..	..	..	..	..	..	..	..	..	1	..	3	3	..	..	..	7	21
Bow,																													
Males	1	1	..	..	..	..	..	1	2	..	3	..	..	..	1	..	3	..	..	1	1	..	..	..	1	1	..	8	...
Females	2	..	..	..	1	..	..	..	1	2	2	..	..	..	1	2	..	1	1	..	..	..	1	1	1	..	..	8	16
Bradford,																													
Males	..	..	1	..	..	..	..	2	..	3	..	..	..	..	..	..	..	1	..	1	1	..	1	2	..	..	..	6	...
Females	..	..	..	..	1	1	..	..	1	2	3	..	..	..	..	2	1	..	2	1	..	..	..	1	1	..	..	8	14
Canterbury,																													
Males	..	1	..	..	..	2	..	1	2	1	..	1	..	..	1	1	5	..	..	..	..	..	..	..	1	..	..	8	...
Females	1	..	..	..	1	..	1	..	2	3	1	..	2	1	4	..	1	5	..	..	..	1	..	..	1	..	..	12	20
Chichester,																													
Males	2	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	2	..	..	4	..
Females	..	..	..	1	..	1	..	..	1	1	1	..	..	..	..	..	..	..	..	..	1	1	..	1	1	1	..	5	...
Not stated	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	10
Concord,																													
Males	23	13	5	5	6	13	8	18	26	18	9	1	..	..	13	14	17	17	12	13	8	7	14	8	10	12	..	145	...
Females	16	7	2	1	9	11	15	12	14	24	8	..	..	..	9	9	13	9	15	16	6	7	11	9	5	10	..	119	264
Danbury,																													
Males	..	..	..	..	2	..	..	1	..	2	..	1	..	..	1	..	..	1	..	..	1	1	..	1	1	..	..	6	...
Females	..	..	..	..	1	..	..	1	..	2	1	..	..	..	..	1	1	..	..	1	..	..	..	..	2	..	..	5	11
Dunbarton,																													
Males	..	..	..	..	..	..	1	..	1	1	1	..	..	..	..	..	..	3	..	..	..	..	..	..	..	1	..	4	...
Females	..	..	1	..	..	1	..	..	..	1	1	..	..	..	..	..	1	..	1	1	..	1	..	..	..	..	..	4	8
Epsom,																													
Males	..	..	..	..	..	..	1	..	2	1	1	1	..	..	1	..	..	1	1	1	..	1	..	..	..	1	..	6	...
Females	1	..	..	1	..	..	..	..	1	1	1	..	..	..	..	..	..	1	2	1	..	..	..	1	..	..	..	5	11
Franklin,																													
Males	6	4	1	..	..	2	..	..	3	3	3	..	..	1	..	2	1	1	3	1	..	3	4	4	2	2	..	23	...
Females	6	7	3	1	1	2	3	1	4	3	2	..	..	..	..	4	3	2	2	3	4	2	2	8	1	1	1	33	56
Henniker,																													
Males	..	2	..	1	..	..	1	1	1	2	..	..	..	..	1	..	..	..	2	2	1	..	..	1	1	..	..	8	...
Females	2	1	1	..	3	..	1	..	4	3	3	2	..	..	2	3	1	1	2	3	2	2	1	2	..	1	..	20	28
Hill,																													
Males	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	2	...
Females	1	..	..	..	..	..	1	1	1	..	1	..	..	..	..	..	..	1	..	2	..	..	..	1	..	1	..	5	7
Hooksett,																													
Males	3	..	..	..	1	..	..	..	4	1	..	..	..	..	1	..	..	..	3	2	..	1	1	1	..	..	..	9	...
Females	3	1	..	..	..	..	1	..	..	1	1	..	..	..	1	1	..	..	1	..	1	..	..	..	2	1	..	7	16
Hopkinton,																													
Males	3	3	..	1	1	1	2	1	4	7	..	..	..	2	3	4	1	4	4	1	1	..	1	1	2	3	..	25	...
Females	..	..	..	1	3	..	1	3	6	1	3	1	..	1	1	5	4	1	2	1	..	1	2	..	2	1	..	20	45
Loudon,																													
Males	..	..	..	..	2	..	..	2	1	4	2	..	..	..	1	1	2	1	1	3	..	..	..	..	..	2	..	11	...
Females	1	1	..	2	..	1	..	1	4	1	3	..	..	..	4	1	2	..	1	..	1	1	2	..	1	1	..	14	25
Newbury,																													
Males	..	..	..	..	1	..	..	..	2	1	1	..	..	..	1	..	1	..	..	1	1	..	1	..	..	..	..	5	...
Females	2	..	..	1	1	1	..	..	..	1	..	1	..	..	1	1	2	..	..	..	..	..	1	..	2	..	..	7	12
New London,																													
Males	..	..	..	..	..	1	..	..	1	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	1	..	3	...
Females	..	1	..	2	..	..	..	..	1	..	2	..	..	..	..	2	..	..	1	..	..	..	1	..	1	1	..	6	9
Northfield,																													
Males	..	..	..	..	2	..	1	..	1	..	1	..	..	..	..	..	..	1	1	..	..	..	..	1	2	..	..	5	...
Females	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	..	..	..	..	..	3	8

TABLE 15 — *continued.*

TOWNS IN MERRIMACK COUNTY — *continued.*	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Pembroke,																													
Males	2	3	1	1	2	..	1	..	2	2	..	..	..	..	..	4	2	1	..	1	2	..	2	2	..	..	..	14	...
Females	4	2	..	1	1	2	..	1	1	1	1	1	..	..	4	1	2	1	..	1	1	1	3	..	1	..	..	15	29
Pittsfield,																													
Males	6	3	..	1	..	1	2	2	3	5	4	..	..	..	3	5	1	1	3	1	2	3	2	2	2	2	..	27	...
Females	4	1	..	3	1	2	1	1	4	1	2	2	..	..	..	1	..	5	1	2	2	2	2	2	2	3	..	22	49
Salisbury,																													
Males	..	..	..	..	..	..	1	1	..	2	1	..	..	..	..	1	..	2	..	..	..	..	1	..	..	1	..	5	...
Females	1	..	1	..	1	1	..	..	1	2	1	..	..	..	..	4	..	..	2	1	..	..	..	1	..	..	..	8	13
Sutton,																													
Males	..	..	..	..	..	1	1	1	1	6	5	..	..	..	..	1	1	2	2	3	1	1	3	1	..	..	..	15	...
Females	..	..	..	1	1	1	..	2	..	1	..	1	..	..	..	..	1	..	..	2	..	..	3	1	..	..	..	7	22
Warner,																													
Males	1	..	..	..	..	..	..	..	2	3	3	1	..	..	..	..	1	2	1	1	..	1	1	2	..	1	..	10	...
Females	..	..	..	..	1	2	2	2	2	5	3	1	..	1	1	3	1	2	1	1	2	2	1	2	..	3	..	19	...
Not stated.	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	30
Webster,																													
Males	..	..	..	..	..	1	..	1	2	4	3	1	..	..	..	..	1	5	3	..	1	..	..	..	2	..	..	12	...
Females	..	1	..	..	..	1	2	1	1	1	..	1	..	..	..	..	3	2	1	..	..	..	..	2	..	..	..	8	20
Wilmot,																													
Males	1	..	..	1	2	..	1	1	3	1	..	..	..	..	..	2	1	..	1	1	2	..	..	..	2	1	..	10	...
Females	..	..	..	1	..	1	1	..	1	1	1	..	..	..	..	..	..	..	1	1	..	..	3	1	..	..	..	6	16

TOWNS IN HILLSBOROUGH COUNTY.

	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Amherst,																													
Males	1	..	..	..	..	..	..	1	1	3	..	..	..	..	..	1	1	1	..	..	..	..	1	..	2	..	..	6	...
Females	2	..	..	..	1	1	1	..	1	2	2	..	..	..	..	..	2	1	..	2	1	2	1	..	1	..	..	10	16
Antrim,																													
Males	1	1	1	4	1	1	..	..	2	2	2	..	..	..	1	..	1	2	2	..	3	1	..	..	3	2	..	15	...
Females	..	..	1	1	2	..	..	1	2	2	1	..	..	..	..	..	1	3	..	1	1	..	1	2	1	..	..	10	25
Bedford,																													
Males	..	..	..	..	2	1	3	..	2	3	1	..	..	..	3	..	..	1	1	3	..	..	1	1	1	1	..	12	...
Females	1	..	..	..	2	..	..	..	1	3	3	..	..	..	1	2	1	..	1	1	3	..	..	1	..	..	..	10	22
Bennington,																													
Males	..	..	..	1	..	..	..	..	1	..	1	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	3	...
Females	..	..	2	..	..	..	..	..	2	2	..	..	..	..	1	..	..	..	..	..	..	1	..	..	2	2	..	6	9
Brookline,																													
Males	2	..	..	..	1	..	..	..	3	1	1	..	..	..	..	1	..	..	..	1	..	..	4	..	1	1	..	8	...
Females	1	..	..	1	..	..	..	..	..	..	3	..	..	..	..	1	..	1	1	..	1	1	..	..	..	..	..	5	13
Deering,																													
Males	1	..	1	..	1	..	1	..	..	..	1	..	..	..	..	..	1	..	2	1	..	..	1	..	..	..	..	5	...
Females	..	2	..	..	..	..	1	..	1	1	4	..	..	..	1	1	..	1	2	..	..	..	2	2	..	..	..	9	14
Francestown,																													
Males	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	...
Females	1	1	..	..	..	..	..	..	1	1	2	2	..	..	1	..	2	..	..	2	..	2	..	..	..	1	..	8	9
Goffstown,																													
Males	3	..	1	..	..	..	1	1	..	4	2	..	..	..	1	..	2	..	..	2	..	1	..	1	4	1	..	12	...
Females	1	2	..	1	1	..	..	1	5	7	3	1	..	1	2	1	3	5	1	2	4	1	..	1	1	2	..	23	35
Greenfield,																													
Males	4	1	2	1	..	..	..	1	..	1	3	..	..	..	1	1	2	..	3	1	1	1	1	..	1	1	..	13	...
Females	2	..	..	1	..	..	..	..	1	..	2	..	..	..	..	1	..	2	..	..	1	..	1	..	..	1	..	6	19
Greenville,																													
Males	8	1	..	..	..	..	..	1	..	2	..	1	..	..	..	3	3	1	1	..	..	3	1	..	1	..	..	13	...
Females	2	..	..	1	..	..	..	..	..	..	3	1	..	..	..	..	..	..	..	..	1	1	2	2	1	..	..	7	20
Hancock,																													
Males	2	..	..	..	..	1	..	..	1	..	1	..	..	..	..	..	1	1	1	..	..	..	..	..	1	1	..	5	...
Females	..	1	..	1	..	..	1	..	1	4	2	..	..	..	1	..	2	..	1	..	2	1	2	..	1	..	..	10	15

TABLE 15 — *continued.*

TOWNS IN HILLSBOROUGH COUNTY — *continued.*	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Hillsborough,																													
Males	1	2	..	..	..	2	..	2	2	1	4	..	..	..	..	..	2	1	2	1	..	2	1	1	2	2	..	14	...
Females	3	1	..	..	2	4	..	1	3	3	1	1	..	..	1	2	..	..	2	1	..	4	3	..	3	3	..	19	33
Hollis,																													
Males	1	..	1	..	1	..	2	1	1	2	2	..	..	1	1	..	2	5	1	..	..	1	..	..	1	1	..	12	...
Females	...	1	..	..	..	1	..	..	2	..	5	..	..	1	1	..	1	..	1	1	2	2	1	..	..	1	..	10	22
Hudson,																													
Males	1	..	..	..	..	..	..	2	3	3	2	..	..	..	1	..	3	1	1	..	..	..	2	..	2	1	..	11	...
Females	...	..	..	1	1	2	1	..	1	1	..	..	..	..	..	3	..	1	..	..	1	1	..	..	..	1	..	7	18
Litchfield,																													
Males	...	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	...
Females	...	..	..	..	..	..	..	..	3	1	..	..	..	..	1	..	..	1	..	..	..	..	..	1	1	..	..	4	5
Lyndeborough																													
Males	...	..	..	..	..	..	..	1	..	3	..	..	..	..	..	..	1	..	..	1	..	1	..	..	..	1	..	4	...
Females	...	..	..	..	..	..	1	..	..	1	1	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	3	7
Manchester,																													
Males	120	55	10	8	31	21	23	23	31	25	11	..	..	..	29	29	29	35	32	25	56	39	20	25	20	19	..	358	...
Females	114	52	8	26	55	36	25	31	41	29	18	3	..	2	42	43	37	44	36	34	52	45	25	27	26	29	..	440	...
Not stated	21	..	..	..	..	..	..	1	1	..	..	..	..	..	2	3	2	3	1	1	1	4	1	3	2	..	..	23	821
Mason,																													
Males	...	..	..	2	1	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	1	2	..	..	2	..	..	6	...
Females	1	..	..	..	1	..	..	..	..	2	1	..	..	..	..	..	..	1	..	..	..	1	..	1	1	1	..	5	11
Merrimack,																													
Males	1	..	..	1	..	..	..	1	..	2	..	..	..	1	..	..	3	..	..	1	1	..	..	1	..	..	..	6	...
Females	...	1	..	..	..	1	..	..	2	..	..	..	..	..	1	..	..	..	..	..	1	1	1	..	..	..	..	4	10
Milford,																													
Males	3	3	..	1	2	1	2	4	4	1	2	..	..	..	2	2	1	2	3	1	..	4	..	3	2	3	..	23	...
Females	...	1	1	3	..	2	1	1	1	6	3	1	..	..	4	2	2	3	1	2	1	2	1	..	..	2	..	20	43
Mont Vernon,																													
Males	...	..	1	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	1	..	..	1	1	1	..	4	...
Females	2	..	..	..	..	1	1	1	1	2	..	..	..	..	..	2	1	..	..	1	1	2	1	..	..	..	..	8	12
Nashua,																													
Males	46	17	4	9	12	8	9	13	10	12	8	1	1	3	11	13	11	19	12	12	17	11	11	11	12	13	..	153	...
Females	46	12	12	8	13	11	12	11	19	11	16	4	..	5	12	20	21	23	9	13	12	13	12	19	13	11	2	180	...
Not stated	7	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	3	..	1	2	..	2	1	..	..	..	1	10	343
New Boston,																													
Males	2	..	..	..	..	2	..	1	1	4	4	..	..	..	..	..	2	2	1	1	..	..	3	1	3	1	..	14	...
Females	1	1	..	..	..	..	2	2	1	1	1	..	..	..	1	2	1	1	..	..	..	..	1	1	..	2	..	9	23
New Ipswich,																													
Males	3	..	..	..	..	1	..	..	2	1	1	..	..	..	..	..	2	2	..	..	2	1	..	..	1	..	..	8	...
Females	...	1	..	2	1	..	1	..	..	2	2	..	..	..	..	..	2	1	2	1	..	..	..	2	1	..	..	9	17
Pelham,																													
Males	...	..	..	2	..	..	2	1	1	3	2	..	..	..	..	3	4	1	..	1	..	..	..	..	..	2	..	11	...
Females	...	..	..	..	2	2	..	1	3	2	..	1	..	..	..	2	2	3	..	1	..	2	..	..	1	..	..	11	22
Peterborough,																													
Males	3	3	1	2	1	1	2	3	4	2	1	1	..	..	..	4	3	3	1	2	1	..	4	..	1	5	..	24	...
Females	1	1	..	1	1	..	2	2	1	5	3	2	..	..	2	1	2	1	1	2	1	2	2	..	2	3	..	19	43
Sharon,																													
Males	...	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	...
Females	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	2	3
Temple,																													
Males	1	..	..	..	1	..	1	..	1	1	..	..	..	..	..	..	1	1	..	2	..	..	..	..	1	..	..	5	...
Females	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	1	..	..	..	1	..	..	..	..	3	8
Weare,																													
Males	4	3	..	..	3	..	1	2	2	5	6	..	..	..	2	3	2	2	1	4	1	3	3	1	2	2	..	26	...
Females	3	..	1	..	2	..	1	2	1	3	4	..	..	..	1	..	2	1	..	1	2	3	2	3	1	1	..	17	43
Wilton,																													
Males	1	..	..	2	1	..	1	..	..	2	2	..	..	..	1	..	1	1	2	1	..	..	..	1	1	1	..	9	...
Females	2	1	..	..	..	..	1	..	1	4	2	..	..	..	..	..	2	..	..	1	1	2	2	..	3	..	..	11	20
Windsor,																													
Males	...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...

TABLE 15 — *continued.*

Towns in Cheshire County.	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Alstead,																													
Males	..	..	..	..	1	1	..	..	4	4	..	..	..	..	1	..	2	..	1	2	..	2	..	1	1	..	..	10	...
Females	..	..	..	..	..	2	..	1	1	1	..	..	..	..	..	..	1	..	..	..	1	..	1	..	2	..	..	5	15
Chesterfield,																													
Males	2	..	..	..	1	..	..	1	1	..	1	..	..	..	..	..	1	..	..	..	2	2	..	..	1	..	..	6	...
Females	..	1	..	..	1	3	..	..	1	2	2	1	..	..	2	1	1	1	2	..	1	..	..	3	..	..	..	11	17
Dublin,																													
Males	..	1	..	..	..	..	1	1	..	..	2	..	..	..	1	1	..	..	..	..	..	..	1	2	..	..	..	5	...
Females	..	1	..	..	..	1	2	1	1	1	3	1	..	..	1	1	3	1	..	..	1	..	..	1	1	2	..	11	16
Fitzwilliam,																													
Males	..	..	..	..	..	..	..	..	1	3	2	..	..	..	..	..	..	3	..	1	..	1	..	1	..	..	..	6	...
Females	1	..	..	1	..	..	1	..	3	1	2	..	..	..	..	2	..	1	1	1	2	1	..	1	..	..	..	9	15
Gilsum,																													
Males	1	..	..	..	1	1	1	1	1	..	1	1	..	..	2	..	..	1	..	1	2	..	..	1	1	..	..	8	...
Females	1	..	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	..	..	1	1	1	1	1	..	..	..	5	13
Harrisville,																													
Males	3	..	..	..	..	..	..	1	..	2	1	..	..	..	2	1	..	..	..	..	1	..	..	..	3	..	..	7	...
Females	2	1	..	..	1	..	1	..	1	1	..	1	..	..	1	..	3	1	..	..	..	1	..	1	..	1	..	8	15
Hinsdale,																													
Males	2	2	1	1	..	2	2	..	2	1	1	2	..	..	..	2	3	1	1	1	2	2	1	1	1	1	..	16	...
Females	4	1	..	2	1	1	..	..	2	..	2	..	..	..	..	1	2	..	1	1	2	2	..	1	2	1	..	13	29
Jaffrey,																													
Males	2	..	..	..	1	1	1	4	1	3	..	1	..	..	4	1	1	1	2	1	..	1	1	1	1	..	..	14	...
Females	3	..	..	1	..	2	..	1	1	2	1	..	..	1	2	1	2	2	..	1	1	1	..	2	..	..	..	12	...
Not stated	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	2	28
Keene,																													
Males	14	5	..	4	3	4	5	4	8	4	4	1	..	..	2	7	6	5	8	3	2	4	4	6	6	3	..	56	...
Females	6	2	1	5	6	6	6	6	5	6	7	2	..	..	4	3	4	8	3	4	3	10	6	5	6	2	..	58	114
Marlborough,																													
Males	4	..	1	..	..	3	..	2	..	2	1	..	..	1	1	1	1	1	3	..	..	4	2	1	..	..	..	14	...
Females	..	2	..	1	3	1	2	2	1	1	1	..	..	3	1	1	1	2	3	2	1	3	..	3	..	..	..	17	31
Marlow,																													
Males	2	..	..	..	1	1	..	..	..	1	..	..	..	..	..	2	..	1	..	..	1	1	..	..	..	..	..	5	...
Females	2	..	1	..	1	..	..	..	..	1	2	..	..	..	..	1	..	..	1	..	2	..	2	..	1	..	..	7	12
Nelson,																													
Males	..	..	..	1	1	..	..	..	1	1	..	..	..	..	..	..	2	..	1	1	..	..	..	..	..	..	..	4	...
Females	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	2	6
Richmond,																													
Males	..	..	..	..	1	..	1	..	1	1	..	..	..	..	..	..	..	..	..	1	..	1	1	1	..	..	..	4	...
Females	1	..	..	1	1	1	2	..	2	2	1	..	..	..	3	..	2	1	..	1	1	2	..	..	1	..	..	11	15
Rindge,																													
Males	..	..	1	1	1	..	..	..	..	2	1	..	..	..	..	1	1	1	1	..	1	..	..	..	1	..	..	6	...
Females	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	2	8
Roxbury,																													
Males	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Stoddard,																													
Males	2	..	..	..	1	..	..	..	2	..	..	..	..	1	..	..	..	..	2	..	..	2	..	1	1	..	..	6	...
Females	2	..	..	2	..	..	..	1	1	2	..	..	..	..	1	..	2	..	..	1	2	..	..	1	1	..	..	8	14
Sullivan,																													
Males	..	..	..	..	..	1	..	..	1	..	1	..	..	..	..	1	..	..	1	..	..	..	..	1	..	..	..	3	...
Females	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	4
Surry,																													
Males	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	..	..	..	..	..	..	..	1	3	..	..	..	..	2	..	..	..	1	..	..	1	..	..	..	..	..	4	4
Swanzey,																													
Males	3	..	..	..	2	..	..	1	4	4	2	..	..	..	1	1	1	..	1	2	1	1	1	2	3	2	..	16	...
Females	1	..	..	1	2	4	..	..	1	1	2	..	..	..	3	1	1	..	1	1	1	2	1	..	1	..	..	12	28
Troy,																													
Males	..	..	..	1	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	1	2	..	..	1	..	..	..	4	...
Females	1	..	1	..	1	..	..	3	..	..	2	..	..	..	..	..	1	..	1	1	2	..	1	1	..	1	..	8	12
Walpole,																													
Males	1	..	..	1	..	1	..	1	1	2	4	..	..	..	1	1	..	2	1	1	..	4	1	..	..	..	..	11	...
Females	3	1	..	..	..	..	1	..	4	..	6	..	..	2	1	3	..	3	..	1	1	1	..	4	1	2	..	17	...
Not stated	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	2	30
Westmoreland																													
Males	..	1	..	..	1	..	..	1	1	6	1	..	..	1	..	2	1	..	1	1	2	1	2	2	..	..	..	12	...
Females	..	..	..	..	1	..	1	1	1	4	5	3	..	..	..	2	1	2	1	1	1	1	2	1	1	3	..	16	28
Winchester,																													
Males	6	2	2	..	1	..	1	..	4	3	5	..	..	1	..	2	4	6	3	2	..	2	2	..	2	2	..	25	...
Females	1	2	1	3	1	2	2	2	..	1	..	..	..	..	2	..	1	1	1	..	1	..	2	1	..	6	..	15	40

TABLE 15 — *continued.*

Towns in Sullivan County.	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Acworth,																													
Males	..	..	..	2	..	..	..	2	4	1	2	..	..	..	3	1	..	..	..	1	1	2	..	..	1	2	..	11	...
Females	..	..	..	..	..	..	1	..	1	5	1	..	..	..	..	3	2	..	1	..	..	..	1	..	..	1	..	8	19
Charlestown,																													
Males	2	1	..	1	2	2	..	1	2	3	1	..	..	..	2	1	3	1	1	..	2	2	1	2	..	..	..	15	...
Females	..	2	1	..	1	..	2	2	..	2	5	..	..	..	..	1	3	2	1	1	3	..	1	2	1	..	..	15	30
Claremont,																													
Males	2	2	..	2	4	4	1	4	4	6	4	1	..	1	1	5	6	2	2	2	1	5	1	4	2	4	..	35	...
Females	5	2	..	1	6	2	5	2	4	3	1	1	..	..	3	1	1	..	4	2	3	4	2	6	3	3	..	32	67
Cornish,																													
Males	..	..	..	..	1	2	1	1	6	1	1	..	..	..	..	..	2	1	2	3	1	1	..	1	1	..	1	13	...
Females	1	..	..	..	..	..	1	..	2	6	1	..	..	..	2	1	1	2	2	2	..	..	..	..	1	..	..	11	24
Croydon,																													
Males	1	..	..	..	..	..	..	..	..	2	1	1	..	..	1	..	..	1	..	1	1	..	..	..	..	1	..	5	...
Females	1	..	..	..	..	1	1	1	1	2	..	1	..	..	1	2	1	..	1	..	..	..	..	2	..	1	..	8	13
Goshen,																													
Males	1	..	..	..	..	..	..	..	..	..	2	..	..	1	..	..	1	..	..	1	..	..	1	1	..	..	..	4	...
Females	1	..	..	..	..	..	1	1	..	4	..	..	..	..	..	..	1	1	1	1	..	1	1	..	..	1	..	7	11
Grantham,																													
Males	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	2	...
Females	..	..	..	..	..	..	..	1	..	2	1	..	..	..	..	..	..	1	..	..	1	..	..	1	1	..	..	4	6
Langdon,																													
Males	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	...
Females	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	...
Not stated	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	3
Lempster,																													
Males	..	..	..	..	1	..	..	..	..	1	2	..	..	..	..	..	..	1	..	..	2	..	..	..	1	..	..	4	...
Females	..	..	..	..	1	..	..	2	2	..	..	..	..	..	1	..	..	..	..	..	..	1	1	1	..	1	..	5	9
Newport,																													
Males	1	1	..	1	1	1	1	2	1	7	2	..	..	..	2	1	1	4	2	..	1	..	3	1	2	1	..	18	...
Females	..	1	..	..	2	1	..	..	2	3	2	1	..	..	1	1	1	..	2	2	..	..	2	..	..	3	..	12	30
Plainfield,																													
Males	1	..	..	1	..	1	..	3	2	6	2	..	..	..	..	2	..	3	1	1	2	1	1	2	1	2	..	16	...
Females	..	..	..	..	1	..	..	..	..	3	1	..	..	..	..	1	2	..	..	..	1	1	..	..	..	..	..	5	21
Springfield,																													
Males	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	2	...
Females	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	3
Sunapee,																													
Males	..	1	..	1	..	..	..	..	..	1	2	..	..	..	..	1	1	..	..	..	..	..	..	1	2	..	..	5	...
Females	..	..	..	1	1	..	..	1	1	..	..	..	..	..	..	1	..	2	1	..	..	..	..	..	..	..	..	4	9
Unity,																													
Males	..	1	..	..	2	..	..	1	2	4	2	1	..	..	2	..	5	..	..	2	1	1	..	1	..	1	..	13	...
Females	..	..	1	..	1	1	..	..	3	3	2	..	..	..	1	1	..	2	1	..	3	..	1	..	..	2	..	11	24
Washington,																													
Males	2	..	..	..	..	..	..	..	3	2	1	..	..	..	1	1	1	..	2	..	..	1	..	1	1	..	..	8	...
Females	..	..	..	1	..	..	..	1	.	1	1	1	..	2	..	..	..	2	..	..	1	1	..	1	..	..	2	7	15

TABLE 15 — *continued.*

TOWNS IN GRAFTON COUNTY.	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Alexandria,																													
Males	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	3	3
Ashland,																													
Males	..	..	..	..	..	..	..	..	2	..	2	..	..	..	..	1	..	..	..	1	1	..	..	1	..	..	..	4	...
Females	1	..	..	..	..	..	..	1	2	1	3	1	..	..	2	..	2	..	..	..	..	..	1	3	1	..	..	9	13
Bath,																													
Males	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	...
Females	1	..	..	..	..	..	..	1	1	1	3	..	..	..	..	..	..	3	..	1	..	2	1	..	..	..	..	7	8
Benton,																													
Males	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Bethlehem,																													
Males	1	..	..	..	2	..	1	2	2	1	..	..	..	..	..	1	1	..	..	2	..	3	1	..	1	..	..	9	...
Females	1	1	..	..	..	..	1	1	1	2	..	..	..	..	..	..	2	..	1	1	..	1	..	..	2	..	..	7	16
Bridgewater,																													
Males	..	..	..	2	..	..	..	..	..	4	2	..	..	..	1	1	..	..	2	1	..	..	..	1	1	1	..	8	...
Females	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	2	10
Bristol,																													
Males	..	..	..	1	..	2	1	1	3	2	..	..	..	..	2	1	..	1	1	..	1	..	1	3	..	..	..	10	...
Females	1	2	..	1	1	2	1	..	2	2	2	..	..	..	..	1	..	3	1	5	2	1	..	..	..	1	..	14	24
Campton,																													
Males	1	..	..	..	..	..	2	1	1	1	..	..	..	..	2	..	..	..	3	..	1	..	..	..	..	..	..	6	..
Females	..	..	1	..	1	1	2	1	..	2	1	..	..	..	1	..	..	2	1	2	..	..	..	2	..	1	..	9	15
Canaan,																													
Males	3	..	..	..	2	1	1	1	3	4	..	..	..	..	2	..	2	..	1	2	1	4	1	..	..	2	..	15	...
Females	2	..	..	1	2	2	1	..	5	4	3	..	..	..	..	..	2	5	1	2	1	4	2	3	..	..	..	20	35
Dorchester,																													
Males	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	2	...
Females	..	..	..	..	..	1	..	2	..	..	1	..	..	..	..	..	..	1	1	1	..	..	..	..	1	..	..	4	6
Easton,																													
Males	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	2	...
Females	..	..	..	..	..	1	..	..	1	1	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	..	..	3	5
Ellsworth,																													
Males	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	...
Females	..	1	..	1	1	..	..	..	..	..	1	..	..	..	1	..	..	..	..	1	..	..	2	..	..	..	..	4	6
Enfield,																													
Males	2	1	1	..	..	1	2	1	2	2	1	..	..	..	1	2	1	1	1	2	..	1	..	1	..	3	..	13	...
Females	..	2	..	1	..	..	1	2	4	2	2	..	..	..	2	1	1	1	2	..	..	1	..	3	2	1	..	14	27
Franconia,																													
Males	..	..	..	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	3	...
Females	..	..	..	..	..	..	1	..	..	1	2	..	..	..	..	..	..	1	..	..	..	..	1	1	..	1	..	4	7
Grafton,																													
Males	2	..	1	1	..	..	..	1	2	..	1	..	..	..	1	..	..	3	1	..	..	..	2	..	1	..	..	8	...
Females	1	1	..	..	1	..	..	..	1	3	2	..	..	..	..	2	2	1	2	1	..	..	..	..	1	..	..	9	17
Groton,																													
Males	..	1	..	..	..	..	..	1	2	1	..	..	..	..	..	..	..	..	1	1	2	..	..	..	1	..	..	5	...
Females	..	..	1	..	..	..	..	1	2	3	..	..	..	..	1	1	1	1	..	1	1	..	..	..	1	..	..	7	12
Hanover,																													
Males	..	1	..	1	1	1	..	1	..	3	1	..	..	..	2	1	1	2	..	..	..	1	1	..	1	..	..	9	...
Females	3	1	..	..	3	..	2	..	1	5	3	..	..	..	2	1	2	2	..	1	..	1	3	2	2	1	1	18	27
Haverhill,																													
Males	..	1	1	..	1	..	1	..	4	9	6	..	..	4	7	3	2	2	4	2	2	..	..	1	..	1	3	27	...
Females	..	1	..	..	1	1	1	1	4	4	4	..	..	1	3	2	..	..	4	2	1	..	4	..	1	..	1	18	...
Not stated	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	46
Hebron,																													
Males	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	3	3
Holderness,																													
Males	..	..	..	..	2	..	1	2	..	1	..	..	..	..	..	..	..	2	1	2	..	..	..	..	1	..	..	6	...
Females	1	..	..	..	1	1	..	..	1	..	1	..	..	..	3	..	..	1	1	..	..	..	..	..	..	..	..	5	11
Landaff,																													
Males	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	2	...
Females	2	1	..	..	..	..	1	..	2	..	1	..	..	..	..	1	1	..	3	1	..	..	..	1	..	..	..	7	9
Lebanon,																													
Males	6	4	..	1	2	2	1	6	2	6	2	1	..	..	1	5	1	5	4	3	3	7	..	3	1	..	..	33	...
Females	5	1	2	..	6	2	1	3	..	6	6	1	..	.	4	1	1	5	1	5	4	4	2	2	1	3	..	33	66

TABLE 15 — *continued.*

TOWNS IN GRAFTON COUNTY — *continued.*	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Lincoln,																													
Males	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Lisbon,																													
Males	1	1	..	..	1	2	1	..	1	2	3	..	..	..	2	..	2	3	..	2	1	..	1	..	1	..	..	12	...
Females	1	..	..	..	..	2	..	..	1	2	1	2	..	..	..	1	1	1	..	1	1	..	2	1	..	1	..	9	21
Littleton,																													
Males	4	2	..	1	1	3	3	1	1	5	3	..	..	..	4	3	6	..	2	1	..	3	2	1	1	1	..	24	...
Females	4	5	..	3	4	1	1	2	2	4	..	..	..	..	..	2	1	6	2	3	1	2	5	2	1	1	..	26	50
Livermore,																													
Males	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Lyman,																													
Males	..	..	..	1	..	..	1	1	1	..	1	..	..	..	..	1	..	1	1	1	..	..	1	..	..	..	..	5	...
Females	..	..	..	1	..	1	..	..	..	..	..	2	..	..	..	1	1	..	..	..	..	..	..	..	..	2	..	4	9
Lyme,																													
Males	1	..	..	..	..	1	1	..	1	2	2	..	..	..	1	2	2	..	..	1	..	..	..	2	..	..	..	8	...
Females	..	..	..	2	..	3	..	1	1	2	1	..	..	..	..	1	..	1	..	..	..	1	2	3	1	1	..	10	18
Monroe,																													
Males	1	..	..	..	..	1	..	..	1	1	..	1	..	..	1	1	..	..	1	..	..	..	1	..	..	1	..	5	...
Females	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	2	7
Orange,																													
Males	..	..	..	..	..	..	1	1	..	2	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	..	..	4	...
Females	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	4
Orford,																													
Males	1	2	..	..	1	1	..	..	..	2	..	..	..	..	1	..	1	1	..	1	..	1	..	..	1	1	..	7	...
Females	..	..	..	1	1	3	..	..	1	..	2	..	..	..	..	2	2	1	1	1	..	..	1	..	..	..	..	8	15
Piermont,																													
Males	1	..	..	..	..	..	..	..	2	1	1	..	..	..	..	..	..	..	..	..	2	1	1	..	1	..	..	5	...
Females	1	1	..	..	2	..	..	..	1	5	2	..	..	..	2	1	..	2	2	2	..	1	2	..	..	..	..	12	17
Plymouth,																													
Males	3	2	..	1	..	2	1	2	3	5	..	..	..	1	2	1	5	6	1	1	1	1	..	..	2	..	..	20	...
Females	2	3	..	..	..	2	1	..	..	2	3	1	..	..	3	..	1	2	1	2	..	2	1	1	..	1	..	14	34
Rumney,																													
Males	1	1	..	..	..	1	..	..	2	3	1	..	..	..	..	1	1	..	1	1	..	1	..	3	..	1	..	9	...
Females	3	..	1	1	..	..	1	1	..	3	2	..	..	..	..	..	2	1	1	1	1	2	..	2	1	1	..	12	21
Thornton,																													
Males	..	..	..	..	..	..	..	..	2	1	3	..	..	..	..	..	2	1	1	..	..	1	..	1	..	..	..	6	...
Females	..	..	..	..	..	..	1	..	1	..	1	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	3	9
Warren,																													
Males	2	..	..	..	1	..	1	1	1	1	1	..	..	..	..	1	2	..	2	..	..	..	..	2	1	..	..	8	...
Females	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	3	11
Waterville,																													
Males	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	...
Females	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	1
Wentworth,																													
Males	2	..	..	..	..	1	1	1	3	2	4	1	..	..	1	1	1	2	1	1	1	2	1	1	1	2	..	15	...
Females	..	..	..	..	1	1	1	..	..	1	4	..	..	..	..	1	1	..	..	..	..	3	1	1	1	..	..	8	...
Not stated	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	24
Woodstock,																													
Males	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	2	...
Females	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	2	4

TABLE 15 — *continued.*

Towns in Coös County.	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Berlin,																													
Males	3	6	..	1	..	..	2	..	1	..	..	..	..	..	1	3	..	1	1	2	1	1	..	1	2	..	..	13	...
Females	3	1	..	..	2	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	3	1	..	..	..	1	..	6	19
Carroll,																													
Males	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Clarksville,																													
Males	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	...
Females	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	2
Colebrook,																													
Males	..	..	..	1	3	1	..	2	..	1	2	1	..	..	..	1	..	1	..	2	3	..	1	2	1	..	..	11	...
Females	2	1	..	..	3	..	3	..	2	1	2	..	..	..	2	3	3	..	..	1	..	..	1	1	3	..	..	14	25
Columbia,																													
Males	1	..	..	..	..	1	..	..	..	2	1	..	..	..	..	..	1	1	..	..	..	..	1	..	2	..	..	5	...
Females	..	..	..	1	..	1	..	..	..	1	1	..	..	.	1	..	1	..	..	..	..	1	..	..	1	..	.	4	9
Dalton,																													
Males	1	..	..	..	1	..	..	1	1	..	1	1	..	..	..	1	1	..	..	..	2	1	..	1	..	..	..	6	...
Females	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	.	1	..	..	..	..	1	3	9
Dummer,																													
Males	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	...
Females	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	3
Errol,																													
Males	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	...
Females	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	2	3
Gorham,																													
Males	2	1	..	1	2	1	..	..	3	..	..	..	..	1	2	1	2	.	..	1	1	1	..	..	2	1	..	11	...
Females	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	3	14
Jefferson,																													
Males	1	1	..	..	1	..	..	3	..	..	..	..	..	..	..	.	1	..	..	1	1	1	1	1	.	..	..	6	...
Females	..	1	..	..	1	1	..	..	1	1	..	2	..	..	..	..	2	..	..	..	3	..	..	..	..	2	..	7	13
Lancaster,																													
Males	..	2	..	..	..	1	..	2	2	5	1	..	..	..	2	2	1	..	..	1	2	2	1	1	1	..	..	13	...
Females	3	4	..	2	3	4	..	1	..	2	1	..	..	..	..	2	1	1	4	1	3	1	5	1	..	1	..	20	33
Milan,																													
Males	..	..	..	1	1	..	..	..	2	..	1	..	..	..	..	..	1	1	1	1	..	..	..	..	..	1	..	5	...
Females	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	.	3	8
Millsfield,																													
Males	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Northumb'l'd,																													
Males	1	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	..	..	..	..	1	2	..	..	..	..	4	...
Females	..	1	..	1	..	1	1	1	..	1	..	..	..	..	..	..	..	1	1	1	2	..	..	..	..	1	..	6	10
Pittsburg,																													
Males	..	1	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	2	...
Females	..	..	..	1	1	..	..	..	..	..	1	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	3	5
Randolph,																													
Males	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	...
Females	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	2	2
Shelburne,																													
Males	..	..	..	..	1	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	2	...
Females	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	3	5
Stark,																													
Males	..	..	..	..	1	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	3	1	..	..	4	...
Females	..	..	..	..	1	1	..	..	..	1	..	..	..	1	..	..	..	..	1	..	..	..	1	..	2	..	..	4	...
Not stated	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	9
Stratford,																													
Males	1	..	..	..	..	1	..	..	1	2	..	..	..	..	..	..	..	..	1	..	3	..	..	..	1	..	..	5	...
Females	..	1	..	3	..	..	..	..	1	..	..	1	..	..	1	1	..	1	..	..	..	1	2	..	..	..	..	6	11
Stewartstown,																													
Males	1	..	1	1	..	1	1	2	1	2	2	..	..	..	1	1	..	1	..	2	..	3	1	1	1	1	..	12	...
Females	2	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	1	..	..	..	1	2	..	1	..	..	..	5	17
Whitefield,																													
Males	5	1	..	1	3	1	2	1	2	1	1	..	..	..	2	3	2	..	..	1	3	1	2	1	2	1	..	18	...
Females	1	1	..	1	1	2	..	2	..	1	2	..	..	..	..	1	1	1	..	1	..	2	4	..	1	..	..	11	...
Not stated	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	30

TABLE 16.

DEATHS BY AGES, SEX, AND MONTHS, — BY COUNTIES.

COUNTIES.	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Over 100.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Total.	Grand total.
Rockingham,																													
Males	54	18	12	10	23	32	36	34	65	77	38	1	....	10	37	34	36	40	35	29	25	37	32	35	33	36	1	410	....
Females	41	30	8	20	41	31	46	38	50	89	79	10	....	13	35	41	57	47	45	41	32	37	43	42	34	42	....	496	....
Not stated	2	....	....	....	....	....	....	....	....	2	....	....	....	1	....	1	....	1	....	....	1	....	1	1	....	....	....	5	911
Strafford,																													
Males	60	29	5	8	15	17	26	30	32	35	13	2	....	4	17	31	30	28	25	30	27	18	18	23	16	11	2	276	....
Females	64	22	13	19	26	28	25	23	33	40	30	6	....	6	24	40	39	32	19	29	28	33	24	19	22	23	3	335	....
Not stated	2	....	1	....	....	....	....	3	....	....	....	....	....	2	1	2	1	1	....	....	....	....	....	1	....	....	....	8	619
Belknap,																													
Males	20	7	4	4	10	5	10	13	16	24	15	3	....	6	10	6	15	9	9	14	13	15	7	12	14	13	....	137	....
Females	13	9	1	12	8	9	6	16	20	23	24	3	....	6	10	7	22	18	12	15	11	11	15	14	6	9	....	150	....
Not stated	2	....	....	....	....	....	....	....	....	.	....	....	....		1	....	1	....	....	....	....	....	....	....	....	....	....	2	289
Carroll,																													
Males	13	7	....	5	9	8	7	14	20	25	21	4	....	1	6	12	18	9	12	9	6	15	14	9	11	13	....	134	....
Females	10	7	2	6	14	11	13	11	14	22	18	4	....	3	11	12	21	17	7	9	11	9	11	11	6	10	....	135	....
Not stated	.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	269
Merrimack,																													
Males	49	31	8	12	21	25	22	33	69	79	42	6	....	4	30	36	42	49	38	34	23	19	35	33	33	29	....	401	....
Females	47	22	8	17	30	30	32	28	55	61	47	11	2	3	29	42	41	32	39	42	22	22	36	38	24	25	1	393	....
Not stated	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1	....	....	....	2	796
Hillsborough,																													
Males	209	86	22	34	58	40	49	58	73	87	58	3	1	5	54	63	78	81	66	60	84	70	54	47	67	59	....	783	....
Females	185	78	25	47	85	61	51	55	96	95	82	16	....	9	72	84	84	96	59	68	88	89	62	62	59	60	2	885	....
Not stated	28	....	....	1	....	....		1	1	....	....	....	....	2	2	3	5	3	2	3	1	6	2	3	2	....	1	33	1701

Cheshire,																												
Males	42	11	5	9	16	16	12	18	34	39	27	5	....	4	15	23	23	22	26	18	16	28	16	22	21	8	....	238	....
Females	29	12	4	18	20	23	18	18	28	29	39	8	....	6	23	17	26	23	17	17	24	27	16	26	17	19	...	252	....
Not stated	3	1	....	..	...	....	....	....	....	....	....	...	....	....	1	....	....	....	....	1	....	1	....	....	....	1	....	4	494
Sullivan,																													
Males	10	6	....	9	11	11	3	15	26	34	22	3	....	2	13	12	20	14	11	11	13	13	7	14	12	11	1	152	....
Females	8	5	2	3	13	5	11	12	16	34	15	5	....	2	10	12	12	12	14	8	13	8	9	13	6	12	2	131	....
Not stated	1	....	...	....	....	....	...	....	...	..	....	....	....	....	1	....	...	....	..	....	...	....	....	..	....	....	..	1	284
Grafton,																													
Males	34	17	5	10	14	20	20	25	44	62	36	3	....	6	33	28	32	30	31	26	18	26	16	21	17	13	5	296	....
Females	29	21	5	13	25	25	18	19	38	60	52	7	..	1	27	20	25	43	29	35	14	27	30	27	18	16	2	313	....
Not stated	...	....	....	....	.	....	....	....	1	1	....	....	....	...	....	....	1	....	1	...	....	....	....	....	....		....	2	611
Coös,																													
Males	16	13	1	8	13	7	5	12	15	16	12	2	..	1	10	12	10	5	3	11	16	12	10	12	14	6	....	121	....
Females	16	11	....	9	13	12	6	5	5	10	12	4	....	1	6	7	10	5	8	7	13	10	14	5	11	7	1	104	....
Not stated	2	...	....	....	..	....	....	....	....	....	....	...	....	...	....	....	....	...	....	...	....	....	...	....	....	...	..	2	227
Total,																													
Males	507	225	62	109	190	181	190	252	394	478	284	32	1	43	225	257	304	287	256	242	241	253	209	228	238	199	9	2948	....
Females	442	217	68	164	275	235	226	225	355	463	398	74	2	50	247	282	337	325	249	271	256	273	260	257	203	223	11	3194	....
Not stated	42	1	1	1	....	....	....	4	2	3	..	....	....	5	6	6	8	6	3	4	2	8	4	7	2	2	....	59	6201

TABLE 17.

CAUSES OF DEATH, ALPHABETICALLY ARRANGED BY MONTHS, AGES, AND SEX.

Sex.	Months.													Causes of Death.	Whole Number.				Ages.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.		Totals.	Males.	Females.	Sex not stated.	Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Unknown.
F											1			Abortion	1		1								1						
M	1		1					1	1					Abscess	9	4	5		1									2	1		
F	1	2								1		1		“					2					1	2						
M									1					“ of brain	1	1						1									
M	1											1		“ of head	2	2			2												
M					1				1					“ of liver	2	2												1			1
M					1							1		“ of lungs	2	2							1						1		
M			1											“ of pelvis	1	1								1							
M	1	2		1	1		1	1	1		1			Alcoholism	10	9	1							1	1	4	1	2			
F			1											“												1					
M	1	1		4	1	2	1		1	1				Anæmia	33	11	21	*1	1	2						1	1	3	3		1
F		1	1	4	3	3	4	3	1			1		“					2	1		3	2	2	2	1	1	3	3	1	
M										1				Aneurism	3	1	2												1		
F				1							1			“														1	1		
M	1	1	1			1	1				2			Angina Pectoris	10	7	3									3			4		
F					1		1		1					“ “					1						1			1			
M	7	9	11	12	9	4	9	9	4	16	12	5		Apoplexy	206	107	99				1			2	6	8	15	26	38	10	1
F	8	6	7	9	8	11	6	8	13	11	8	4		“					1			1		2	6	8	11	18	31	20	1
M	1			1	1		2							Asphyxia	6	5	1		1						2		1				1
F		1												“					1												
M	1		1	3	1	1	2					1		Asthma	13	10	3		1					1		2	3		2		
F			1			1	1							“								1						1	1		
M						2								Ascites	5	2	3			2											
F	1	1								1				“											1	1		1			
M								1						Anthrax	1	1												1			

M					1	1	1							Bladder, disease of	3	3													1	2	
M	1	3									1	1		Blood poisoning	15	6	9								1	1		2			2
F				1		1	1		4		2			" "										1	3		2		2		1
M								1						Bowels, disease of	2	1	1		1												
F												1		" "														1			
M	3	2	2	2	4	1	1	6	5	1	8	1		Brain, disease of	69	36	33		6	4		1		2	1		6	5	6	4	1
F	3	3	3	3	3	6	1	1	4	1	3	2		" "					4	3	2		1	3	1	1	5	7	4	2	
M	2	1			5			2		4		1		Brain, softening of	40	15	25										2	6	4	3	
F	1		5	3	4		1	1	2	1	5	2		" "											1		4	5	10	5	
M	7	5	3	3	6	3	1	2	1	5	2	3		Bronchitis	108	41	67		13	4	1			2	1		1	3	7	9	
F	7	7	11	10	9	7	1		6	5	2	2	1	"					15	8	1	1			3	1	2	7	12	16	1
M				3	1			1	1	1		1		Burns and scalds	24	7	16	*1		5	1						1				1
F	1	2			3			5	1	2	1	1		" "					1	4	1	2	1	2	1		1		1	2	
M	1								1					Calculus	3	2	1											1	1		
F										1				"									1								
M	4	4	3	4	4	4	1	3	1	6	5	4	1	Cancer	130	44	86						1		1	4	7	11	16	4	
F	8	7	10	10	3	9	9	6	6	5	6	7		"											7	12	19	22	16	7	3
M					1									" of bowels	6	1	5										1				
F	1		1					2		1				" "													2	2	1		
F										1				" of brain	1		1											1			
F				1						1	2	1		" of breast	5		5									3			2		
M												1		" of face	1	1												1			
M	2		1					1	1					" of liver	12	5	7									1		1	2	1	
F	1	1		1	1	1					1	1		" "												2	1	2	2		
M	1										1			" of rectum	3	2	1									1			1		
F		1												" "												1					
M	4	1		4			1		1	2	3	4		" of stomach	38	20	18										4	9	7		
F	2	3	5	1				1	1	3	1	1		" "												1	5	4	7	1	
M												1		" of tongue	1	1											1				
F	1	2		2	1	1	2		1	2	3	1		" of uterus	16		16								3	5	2	4	2		
M			1					1						Carbuncle	3	2	1									1		1			
F								1						"													1				
M						1								Caries of bone	2	1	1									1					
F	1													" "						1											
M	3	3	5	1	7	5	6	6	4	2	1	3	1	Casualty	64	47	17			3	1		2	8	7	4	7	6	5	2	2
F	2	3	2	1	3			3			1	2		"					1	1			2				2	4	4	3	
M								1	1	1				Catarrh	5	3	2		1				1					1			
F		1				1								"														1		1	
M					2				1		1	1		Cerebro-spinal meningitis	20	5	15		1	2							1	1			
F	1	1	1			4		4	1	2	1			" "					1	4	2		1	2	1		1	3			
F		3	4	1	1	3	3	2	1	1	3	2		Childbirth	24		24						2	14	5	3					
M			1	3	1	3	44	34	16	5		3		Cholera infantum	219	110	109		95	15											

* Classed with males.

TABLE 17 — *continued.*

	Months.														Whole Number.				Ages.												
Sex.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	CAUSES OF DEATH.	Totals.	Males.	Females.	Sex not stated.	Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Unknown.
F	..	1	..	..	2	2	31	46	22	4	..	..	1	Cholera infantum	....	....	....	....	91	18	....	....	....	....	....	...	....	....	....	....	....
M	1	..	..	1	..	1	3	3	1	..	1	..	..	" morbus	20	11	9	....	1	....	2	....	....	....	....	1	1	2	1	3	...
F	1	1	..	..	..	..	2	2	1	1	1	..	..	" "	....	....	....	....	2	2	....	....	....	....	1	....	....	2	1	....	1
F	1	..	..	..	..	..	..	..	..	..	..	..	..	Cold	1	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....
M	..	..	..	..	1	..	..	..	..	..	..	..	..	Colic	3	1	2	....	....	....	....	....	1	....	....	....	....	....	....	....	....
F	..	..	..	..	1	..	..	1	..	..	..	..	..	"	....	....	....	....	1	...	....	....	..	....	....	....	1	....	....	....	....
M	25	37	38	34	39	44	27	26	26	24	34	22	1	Consumption	857	373	480	*4	19	8	1	2	34	84	67	50	43	38	20	8	3
F	46	45	49	45	44	52	37	28	28	41	31	33	1	"	....	....	....	....	12	6	3	10	57	134	92	57	33	37	22	11	6
M	3	4	7	1	1	1	2	7	1	2	3	1	..	Convulsions	76	31	43	*2	13	17	...	1	....	....	....	2	....	....	....	....	....
F	..	2	2	6	..	6	3	4	6	4	4	5	1	"	....	....	....	....	19	18	....	....	3	...	1	2	....	....	....	....	..
F	..	..	..	..	1	..	..	..	..	..	..	..	..	Cramps	1	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....
M	6	8	10	..	2	..	..	1	2	4	6	4	..	Croup	74	42	31	*1	11	27	5	....	....	..	....	....	....	....	....	....	....
F	3	3	5	..	1	3	1	3	1	5	2	4	..	"	....	....	....	....	9	14	4	....	....	1	2	....	1	..	....	...	....
M	..	1	..	..	..	1	1	..	..	..	..	..	..	Cyanosis	9	3	6	....	3	....	....	....	....	....	....	....	....	....	....	....	....
F	1	1	1	1	..	..	..	..	1	1	..	..	..	"	...	....	....	....	5	1	....	....	....	...	....	....	....	....	....	....	....
M	..	3	4	1	..	2	..	1	3	2	..	1	..	Cystitis	20	17	3	...	....	....	....	....	....	....	....	...	2	5	6	4	....
F	..	..	..	..	..	1	..	..	..	..	..	2	..	"	...	....	....	....	....	....	....	....	....	....	....	....	....	1	1	1	....
M	2	4	7	7	4	6	7	6	3	4	3	2	..	Debility	107	55	52	....	24	2	....	....	....	....	2	....	1	7	10	9	....
F	3	6	3	6	7	3	5	5	6	..	5	3	..	"	...	....	....	....	24	1	....	....	....	....	2	4	....	5	8	8	....
M	..	..	..	..	..	..	1	..	..	..	..	..	..	Delirium tremens	1	1	....	....	....	....	....	....	....	....	....	....	1	....	...	..	....
M	3	..	..	5	..	..	..	1	1	2	..	3	..	Diabetes	21	15	6	....	....	....	1	....	1	1	....	3	2	3	2	2	..
F	..	..	3	..	..	1	..	..	..	..	..	2	..	"	....	....	....	....	....	1	....	...	...	....	...	....	1	2	1	1	....
M	..	..	..	..	1	2	3	5	2	3	1	2	..	Diarrhœa	40	19	21	....	7	1	....	....	....	....	....	1	2	5	2	1	....
F	2	1	..	1	1	3	2	5	5	1	..	..	..	"	...	....	....	....	6	....	....	....	....	2	1	2	1	1	6	2	....
M	7	2	1	1	2	..	2	4	2	6	4	6	..	Diphtheria	78	37	41	....	5	19	11	....	1	1	....	....	....	....	....	....	....
F	6	3	2	1	3	2	1	2	4	3	8	6	..	"	...	....	....	....	5	13	11	5	2	3	....	1	1	....	....	....	....
M	6	3	5	4	3	4	..	2	..	5	3	3	1	Dropsy	91	39	52	....	...	1	....	2	....	...	2	2	8	4	14	4	2
F	3	2	10	..	3	8	4	6	1	6	5	4	..	"	....	....	....	....	....	1	....	....	....	2	1	4	4	16	12	9	3

M	2	..	1	1	1	6	5	4	2	1	..	5	..	Drowned	35	28	7	....	....	3	7	4	3	4	1	2	1	2	....	....	1
F	..	..	..	1	..	1	3	..	2	..	..	..	..	“	....	....	....	....	1	2	2	....	1	1	....	....	....	....	....	....	....
M	1	..	..	..	1	1	4	4	1	3	..	1	..	Dysentery	40	16	24	....	4	8	....	....	....	....	....	....	....	....	2	2	....
F	..	..	..	1	..	2	2	7	12	1	..	1	..	“	....	....	....	....	4	5	1	....	....	....	1	2	1	4	2	4	....
M	..	..	..	..	..	..	..	..	..	..	1	..	..	Dyspepsia	4	1	3	....	....	....	....	....	....	....	....	1	....	....	....	....	....
F	..	2	..	..	..	..	1	..	..	..	..	..	..	“	....	....	....	....	2	....	....	....	....	....	....	....	....	....	1	....	....
F	1	..	1	..	..	..	..	..	..	..	..	..	..	Eclampsia	2	....	2	....	....	....	....	....	....	1	....	1	....	....	....	....	....
F	..	1	..	..	..	..	..	..	..	1	..	..	..	Embolism	2	....	2	....	....	....	....	....	....	1	....	1	....	....	....	....	....
M	..	..	..	..	..	..	..	1	..	..	..	..	..	Encephalitis	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
M	..	..	..	1	..	1	1	3	1	..	2	..	..	Enteritis	23	8	14	*1	2	2	....	....	....	1	....	....	....	4	....	....	....
F	1	..	3	1	..	..	1	4	1	2	1	..	..	“	....	....	....	....	5	1	....	....	....	1	1	....	....	....	4	2	....
M	..	3	2	2	1	1	1	2	1	2	1	1	..	Epilepsy	23	17	6	....	1	....	....	....	1	6	1	5	2	....	....	1	....
F	..	..	..	..	1	2	..	..	..	..	..	3	..	“	....	....	....	....	....	1	....	....	1	1	....	3	....	....	....	....	....
M	..	..	..	..	1	..	..	..	..	..	..	..	..	Epistaxis	1	1	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
M	1	2	2	3	2	1	..	..	1	1	..	2	..	Erysipelas	24	15	9	....	2	....	....	....	....	1	1	....	2	3	3	3	....
F	..	..	2	3	..	1	..	..	..	..	2	1	..	“	....	....	....	....	2	....	....	....	....	....	1	....	....	1	4	1	....
M	..	..	..	1	..	..	..	..	..	..	..	..	..	Execution	1	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....
M	..	..	..	..	1	1	..	..	..	..	..	..	..	Exposure	4	2	2	....	....	....	....	....	....	....	....	....	1	1	....	....	....
F	..	1	..	..	..	..	1	..	..	..	..	..	..	“	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....
M	..	1	1	..	..	..	..	..	..	1	..	..	..	Fever	4	3	1	....	....	1	....	....	1	....	1	....	....	....	....	....	....
F	..	..	..	1	..	..	..	..	..	..	..	..	..	“	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....
M	..	..	..	..	1	..	1	..	..	..	..	..	..	(Fever), bilious	5	2	3	....	....	....	....	....	....	....	....	....	....	1	1	....	....
F	1	..	1	..	..	1	..	..	..	..	..	..	..	“ “	....	....	....	....	....	....	....	....	1	....	....	....	....	1	1	....	....
M	..	..	..	..	..	..	..	..	1	..	1	..	..	“ gastric	5	2	3	....	....	....	....	....	....	....	....	....	1	....	1	....	....
F	..	..	1	..	..	1	1	..	..	..	..	..	..	“ “	....	....	....	....	....	....	1	....	1	1	....	....	....	....	....	....	....
M	..	..	..	1	..	..	..	..	..	..	..	..	..	“ malarial	2	1	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....
F	..	..	..	..	..	1	..	..	..	..	..	..	..	“ “	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
F	3	2	1	4	1	2	..	2	2	..	..	1	..	“ puerperal	18	....	18	....	....	....	....	....	1	10	4	3	....	....	....	....	....
M	1	..	1	..	..	..	..	..	..	..	..	..	..	“ rheumatic	2	2	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....
M	1	..	..	..	..	..	..	..	..	..	..	..	..	“ septic	1	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....
M	2	5	3	1	7	6	..	4	13	5	6	7	..	“ typhoid	124	59	65	....	2	3	1	3	9	17	7	4	3	4	4	1	1
F	5	2	7	5	4	5	1	4	12	11	5	4	..	“ “	....	....	....	....	....	3	6	8	9	15	4	4	4	4	5	2	1
M	..	..	..	..	..	..	..	..	..	..	1	..	..	“ typhus	3	1	2	....	....	....	....	....	....	1	....	....	....	....	....	....	....
F	..	..	..	..	..	..	..	..	2	..	..	..	..	“ “	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....
M	2	..	1	2	..	2	1	..	..	..	..	..	..	Fits	13	8	5	....	4	1	1	....	....	1	....	....	....	....	1	....	....
F	..	1	..	2	1	..	..	..	..	1	..	..	..	“	....	....	....	....	2	1	....	....	....	....	1	....	....	....	1	....	....
F	1	..	..	..	..	..	..	..	..	..	..	..	..	Fistula	1	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....
M	2	1	..	3	1	2	3	..	2	2	..	..	..	Fracture	28	16	12	....	....	....	....	....	....	2	2	3	3	3	3	....	....
F	1	2	1	..	1	1	2	..	2	2	..	..	..	“	....	....	....	....	....	1	....	....	....	....	....	....	....	....	2	9	....
M	..	3	4	1	..	2	..	1	1	2	..	..	..	Gangrene	22	14	8	....	....	....	....	....	....	....	....	....	1	1	8	4	....
F	1	..	1	1	..	1	..	1	..	..	3	..	..	“	....	....	....	....	....	....	....	....	....	....	....	....	....	3	3	1	1
M	..	1	1	1	2	1	1	..	2	2	1	2	..	Gastritis	48	14	34	....	3	....	....	1	....	....	1	3	....	1	3	2	....

* Classed with males.

TABLE 17 — *continued.*

Sex.	Months. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Causes of Death.	Whole Number. Totals.	Males.	Females.	Sex not stated.	Ages. Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Unknown.
F	1	5	2	3	2	2	2	1	4	5	4	3	..	Gastritis	...	....	...		4	1	1	....	1	4	3	....	6	3	6	5	....
F	..	..	..	..	..	..	..	..	..	..	..	1	..	Goitre	1	....	1	....	...	....	....	....	...	....	....	1	....	....	....	....	....
F	..	..	..	..	..	..	..	1	..	..	..	..	..	Gravel	1	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....
M	..	1	..	..	..	..	..	..	..	..	..	..	..	Headache	3	1	2	....	1	....	....	....	....	....	....	....	....	...	....	....	....
F	..	1	..	..	..	..	1	..	..	..	..	..	..	"	....	....	....	....	2	...	....	....	...	....	....	....	....	....	....	....	....
M	16	14	21	25	19	19	22	15	20	19	30	21	..	Heart disease	474	241	233	....	7	2	....	....	....	7	10	17	27	72	70	27	2
F	16	23	25	22	18	19	20	20	23	20	14	13	..	" "	....	....	....	....	5	3	1	5	5	10	9	24	29	50	55	34	3
M	1	1	1	1	..	..	2	2	1	1	..	..	..	Hemorrhage	14	10	4	....	2	2	....	1	....	....	....	1	....	1	2	1	....
F	1	..	..	..	1	1	1	..	..	..	..	..	..	"	....	....	..	....	2	....	.. .	...	....	1	....	....	....	....	1	....	....
M	2	..	2	..	..	..	..	..	..	..	1	3	..	Hepatitis	18	8	10	....	1	....	1	....	....	...	1	....	....	....	5	....	....
F	..	2	.	..	1	..	4	1	..	1	..	1	..	"	....	....	...	....	1	....	....	....	....	...	1	2	1	....	3	2	....
M	..	..	1	..	1	..	1	2	1	..	1	..	..	Hernia	11	7	4	....	....	....	....	....	....	....	....	1	....	4	1	1	....
F	..	..	..	..	..	..	..	..	..	..	2	2	..	"	....	....	....	....	....	....	....	....	....	....	1	....	...	1	....	1	1
M	..	..	..	..	..	1	..	..	..	..	..	..	..	Hip disease	2	1	1	...	....	....	....	...	1	....	....	....	....	....	....	....	....
F	..	..	..	..	..	1	..	..	..	..	..	..	..	" "	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
M	1	1	1	1	2	..	1	1	..	4	2	..	..	Hydrocephalus	24	13	10	*1	8	6	....	....	...	....	....	....	....	....	....	....	....
F	2	..	1	2	2	..	..	..	2	..	..	1	..	"	...	....	....	....	6	2	....	....	....	1	1	....	....	....	....	.. .	....
M	..	..	..	..	1	1	..	2	..	1	1	..	..	Inanition	15	6	9	....	6	....	....	....	....	....	....	....	...	....	....	....	....
F	..	1	1	1	..	1	1	..	..	1	2	1	..	"	..	....	....	....	4	....	....	....	...	....	....	1	1	2	....	1	....
M	..	..	..	..	..	..	..	..	..	..	..	1	..	Infantile	4	1	3	....	1	....	....	....	....	....	....	....	....	....	....	.. .	....
F	..	..	..	..	..	..	..	1	..	..	1	1	..	"	....	....	....	....	3	....	....	....	....	....	....	....	.	....	....	.. .	....
F	..	..	2	..	..	..	..	1	..	..	..	..	..	Inflammation	3	...	3	....	....	....	...	....	....	....	....	1	1	1	....	....	....
M	..	1	2	..	2	1	3	2	..	4	5	1	..	" bowels	32	21	11	....	4	1	1	....	4	3	1	....	2	1	2	1	1
F	..	2	2	..	3	1	3	..	..	..	..	..	..	" "	..	....	....	....	3	2	1	1	....	1	....	1	....	1	1	....	....
M	..	.	1	1	..	..	..	..	..	..	..	..	..	Influenza	6	2	4	...	....	....	....	....	....	....	....	...	....	....	1	1	....
F	..	..	2	2	..	..	..	..	..	..	..	..	..	"	....	...	....	....	1	....	....	....	...	....	....	....	....	1	1	1	....
M	1	1	1	1	2	2	..	..	4	2	1	1		Insanity	28	17	12	*1	....	....	....	....	...	1	2	3	2	6	2	....	....
F	..	1	1	1	1	..	1	1	2	1	1	2	..	"	....	....	....	...	....	....	....	....	....	1	3	3	2	1	2	....	....

M	..	1	..	..	..	..	..	1	..	..	..	..	..	Intussusception	2	1	....	*1	1	....	....	....	....	....	....	....	....	....	....	....	1
M	..	1	1	2	..	..	..	1	..	1	..	..	..	Jaundice	12	6	6	....	3	....	....	....	....	1	....	....	....	2	....	....	....
F	1	..	2	1	..	2	..	..	..	..	..	..	..	“	....	....	....	....	....	....	....	....	....	....	....	....	2	2	1	1	....
M	..	..	..	..	..	..	..	..	..	..	1	..	..	Joint disease	1	1	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
M	1	4	2	1	1	..	5	1	1	3	1	1	..	Kidney disease	30	21	9	....	....	....	....	....	1	....	1	....	3	3	11	2	....
F	1	2	..	1	..	1	..	..	2	2	..	..	..	“ “	....	....	....	....	....	1	....	....	....	....	....	1	2	....	3	2	....
M	1	..	1	..	..	..	..	1	..	1	..	..	..	Laryngitis	5	4	1	....	....	3	....	....	....	....	....	....	1	....	....	....	....
F	..	..	..	..	..	..	..	..	1	..	..	..	..	“	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
M	..	2	..	..	..	..	..	..	..	..	..	..	..	Liver, cirrhosis of	2	2	....	....	..	....	....	....	....	1	....	....	1	....	....	..	....
M	4	..	3	3	7	6	2	2	1	1	1	..	..	Liver disease	60	30	30	....	....	....	....	....	....	....	3	5	5	12	4	1	....
F	3	2	4	2	1	1	6	3	2	1	3	2	..	“ “	....	....	....	....	....	....	1	....	....	1	2	3	6	5	9	3	....
M	..	1	..	..	..	..	..	..	..	..	..	..	..	Locomot. Ataxia	1	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....
M	1	1	1	..	1	..	..	1	..	2	1	1	..	Lung disease	13	9	4	..	2	1	....	....	....	1	....	3	1	1	....	....	....
F	..	1	1	..	..	1	..	..	..	..	1	..	..	“ “	....	....	....	....	1	....	....	....	....	....	....	....	1	1	1	....	....
M	1	..	..	2	..	..	1	..	1	1	..	1	..	Malformation	10	7	3	....	7	....	....	....	....	....	....	....	....	....	....	....	....
F	..	..	..	1	2	..	..	..	..	..	..	..	..	“	....	....	....	..	2	1	....	....	....	....	....	....	....	....	....	....	....
M	..	..	1	..	..	..	..	..	..	..	..	..	..	Malignant pustule	1	....	....	*1	....	....	....	....	....	....	....	....	....	1	....	....	....
M	..	..	1	3	1	4	.	5	2	3	2	1	..	Marasmus	39	22	17	...	13	1	....	....	....	....	....	....	2	1	4	1	....
F	..	2	3	..	3	3	2	3	1	..	..	..	..	“	....	....	....	....	8	2	....	....	....	1	1	1	2	1	....	1	....
M	.	1	5	9	4	2	..	..	..	..	1	..	..	Measles	45	22	23	...	7	11	4	....	....	....	....	....	....	....	....	....	....
F	..	..	1	6	9	3	3	1	..	..	..	..	..	“	....	....	....	....	5	15	1	1	1	....	....	....	....	....	....	....	....
M	6	12	5	3	3	7	7	10	3	3	6	6	..	Meningitis	135	70	64	*1	20	21	6	1	5	5	4	2	3	1	2	....	1
F	5	3	5	11	6	8	1	5	4	8	5	3	..	“	....	....	....	....	17	17	5	4	3	6	6	....	2	....	3	....	1
F	..	..	..	1	..	..	..	..	..	..	..	..	..	Metria (Puerp. F.)	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1
F	..	..	..	..	1	..	..	..	..	..	..	..	..	Metritis	1	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....
F	..	1	..	..	..	..	..	..	..	..	..	..	..	Mortification	1	...	1	....	....	....	....	....	....	....	....	..	....	1	....	....	....
M	..	..	..	..	..	1	..	..	..	..	..	..	..	Narcotism	2	1	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....
F	..	..	..	..	..	..	..	..	..	..	1	..	..	“	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
M	5	4	8	5	8	8	5	5	6	1	12	3	..	Nephria (Bright's disease)	112	70	42	....	1	1	....	4	3	6	8	6	10	14	13	4	....
F	2	4	5	6	4	4	3	3	2	6	..	3	..	“ “ “	....	....	....	....	1	1	....	1	....	3	9	6	4	8	7	1	1
M	..	1	1	..	2	2	..	..	..	..	..	2	..	Nephritis	18	8	10	..	....	....	....	....	1	1	....	1	....	1	4	....	....
F	..	2	..	..	..	2	..	1	2	3	..	..	..	“	....	....	....	....	....	....	2	....	....	1	2	2	....	1	....	2	....
M	..	..	..	..	..	1	..	..	..	..	..	..	..	Nervous prostration	15	1	14	....	....	....	....	....	....	....	....	....	1	....	....	....	....
F	1	2	1	..	1	1	2	1	1	..	2	2	..	“ “	....	....	....	....	....	....	....	....	1	2	2	1	3	2	2	1	....
F	..	..	..	1	..	..	..	..	..	1	..	..	..	Neuralgia	2	....	2	....	1	....	....	....	....	....	....	....	....	....	1	....	....
M	.	1	..	..	..	..	..	1	..	1	..	..	.	Noma (canker)	6	3	3	....	....	2	....	....	....	....	....	....	....	....	....	1	....
F	..	..	..	..	..	1	2	..	..	..	..	..	..	“ “	....	....	....	....	1	..	....	....	....	....	1	1	....	....	....	....	....
M	14	11	13	10	12	11	7	11	9	10	2	5	3	Not stated	265	108	147	*10	39	8	5	....	2	....	5	8	7	11	10	8	15
F	12	22	8	18	13	7	14	11	9	12	6	9	6	“	....	....	....	....	26	5	1	1	2	8	9	12	11	10	20	20	22
M	17	20	25	20	18	14	6	13	12	9	10	16	..	Old age	420	179	240	*1	....	...	....	....	....	....	....	...	1	4	48	130	2
F	24	15	31	38	14	14	18	25	17	16	10	18	..	“	....	...	...	....	....	....	....	....	....	....	...	....	....	3	46	191	....
F	..	..	2	2	..	2	..	..	..	1	1	..	..	Ovarian dropsy	8	....	8	....	....	....	....	....	....	1	1	2	1	2	1	....	....

* Classed with males.

TABLE 17 — *continued.*

Sex.	Months.													Causes of Death.	Whole Number.				Ages.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.		Totals.	Males.	Females.	Sex not stated.	Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Unknown.
M	11	15	10	13	7	12	11	10	9	10	12	8	..	Paralysis	285	127	157	*1	....	1	....	1	....	4	....	9	12	23	56	22	....
F	17	19	11	17	7	18	13	11	10	13	9	12	..	"	....	....	....	....	1	1	1	....	....	2	3	8	14	25	55	45	2
M	1	1	..	..	..	..	..	..	..	1	..	..	..	Pericarditis	4	3	1	....	....	....	....	....	1	....	1	....	....	1	....	....	....
F	..	..	..	..	..	..	..	1	..	..	..	..	..	"	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....
M	..	2	4	3	3	..	.	2	2	2	2	1	..	Peritonitis	45	20	25	...	2	1	2	1	3	3	1	3	2	2	....	....	....
F	6		2	1	1	3	.	2	2	2	3	3	..	"	....	....	....	....	....	....	....	1	2	11	3	2	1	5	....	....	....
M	..	..	.	1	..	..	..	..	..	..	1	..	..	Pleurisy	10	2	8	....	....	....	....	....	....	....	....	....	1	....	1	....	....
F	..	..	2	2	..	2	..	..	1	..	..	1	..	"	....	....	....	....	....	....	....	1	1	....	1	....	1	....	1	3	....
M	24	35	49	47	12	13	4	4	7	16	24	10	..	Pneumonia	504	244	259	*1	40	21	4	1	6	8	17	15	20	30	49	33	1
F	29	24	52	48	23	12	9	6	3	17	14	22	..	"	....	....	....	....	29	28	4	3	5	7	10	17	17	42	56	41	....
M	..	1	..	..	..	1	..	..	..	..	..	..	..	Poisoned	6	2	4	....	....	....	....	....	....	....	....	....	2	....	....	....	....
F	..	..	1	..	..	..	2	..	1		..	..	..	"	....	....	....	....	...	1	...	....	1	1	....	....	....	1	....	....	....
M	..	..	..	..	1	..	..	..	..	..	..	..	..	" morphine	1	1	....	....	....	....	....	....	....	....	1	....	....	...	....	....	....
F	.	..	1	..	..	..	..	..	..	..	..	..	..	Polypus, nasal	1	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....
M	1	..	2	3	5	.	1	3	3	1	1	3	..	Premature births	41	21	18	*2	23	....	....	....	....	....	....	....	....	....	....	....	...
F	1	2	..	..	1	4	3	..	2	..	1	4	..	" "	....	....	....	....	18	...	....	....	....	....	....	....	....	....	....	....	....
M	..	..	..	1	..	..	..	..	..	1	1	..	..	Prostate, disease of	3	3	....	....	....	....	....	....	....	....	....	....	....	1	2	....	....
F	1	1	1	..	..	2	1	..		1	..	..	..	Puerperal convulsions	7	....	7	....	....	....	....	....	1	2	3	1	....	....	....	....	....
F	..	..	..	..	1	..	..	..	..	..	..	..	..	" septicæmia	1	...	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....
M	..	..	..	1	..	1	..	..	..	2	..		..	Pyæmia	5	4	1	....	....	....	...	....	....	....	....	....	2	2	...	....	....
F	..	..	..	..	1	..	..	..	..	..	..	..	..	"	....	....	....	....	....	....	....	....	...	1	....	....	....	....	....	....	....
F	..	..	..	.	..	..	1	..	..	..	..	..	..	Quinsy	1	....	1	....	....	...	1	....	....	....	....	....	....	....	....	....	..
M	..	1	..	..	2	1	4	2	..	4	2	3	..	Railroad accident	19	19	....	....	....	....	1	1	....	8	2	2	....	1	....	....	4
M	3	3	4	..	2	..	1	..	..	2	..	1	.	Rheumatism	28	16	12	....	....	....	....	1	....	....	2	2	2	6	3	....	....
F	..	2	3	2	1	1	1	1	..	..	.	1	..	"	....	....	....	....	....	....	....	....	....	1	....	....	2	4	5	....	....
M	1	2	2	4	5	2	2	1	1	.	..	2	..	Scarlatina	53	22	31	....	2	16	2	2	...	....	....	....	....	....	....	....	....
F	1	3	5	2	5	2	1	1	2	2	4	3	..	"	....	...	....	...	3	14	9	2	1	1	1	....	....	....	....	....	....
M	..	1	2	..	..	1	1	..	1	2	..	..	..	Scrofula	22	8	14	....	2	....	1	....	1	....	1	....	2	1	...	....	....

F	..	2	..	1	2	2	..	3	..	..	1	3	..	Scrofula	....	....	....	....	4	2	2	....	...	1	....	....	....	3	2	....	....
M	..	..	2	..	..	1	1	1	..	..	2	..	..	Septicæmia	16	7	9	....	....	1	....	....	....	....	3	....	2	1	....	....	....
F	1	2	..	..	..	1	..	..	2	2	..	1	..	“	....	....	....	....	1	....	....	....	1	2	2	3	....	....	...	...	....
M	..	..	..	1	..	1	..	..	..	..	..	1	..	Shock	3	3	....	....	1	....	....	....	....	....	....	1	....	....	....	1	....
M	1	.	1	..		.	..	..	1	..	1	1	..	Skin disease	5	5	....	....	1	....	....	....	...	...	....	....	1	1	1	1	....
M	..	..	..	..	..	..	..	..	2	..	..	..	..	Small-pox	2	2	....	....	....	....	2	....	...	....	...	....	....	....	....	..	....
F	..	..	..	..	..	1	..	..	..	..	..	..	..	Spina bifida	1	....	1	....	1	....	....	...	....	....	....	....	....	....	....	....	....
M	..	1	..	..	2	..	..	..	..	..	1	..	..	Spine disease	14	4	10	...	1	....	...	....	....	...	1	....	1	....	1	....	....
F	..	..	2	1	..	2	..	..	2	1	1	1	..	“ “	....	....	...	....	....	...	1	....	2	1	1	1	3	....	1	....	....
M	..	..	..		..	..	..	..	..	1	..	..	..	Spleen disease	1	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
M	4	8	9	11	3	7	9	6	10	9	9	7	..	Still-born	145	70	53	*22	92	....	....	....	....	....	....	....	....	....	....	....	....
F	3	4	3	4	4	3	4	2	5	10	3	7	1	“	....	....	....	....	53	....	....	....	....	....	....	....	....	....	....	....	....
M	..	1	..	..	1	..	..	..	..	1	..	2	..	Stomach disease	13	5	8	....	....	....	....	....	....	....	....	...	1	....	3	1	....
F	..	..	1	.	2	..	..	.	3	2	..	..	..	“ “	....	....	....	....	...	....	....	....	....	....	....	3	....	1	4	....	....
M	..	..	..	1	..	..	..	..		..	..	..	..	Strangulation	1	1	...	....	1	....	....	....	....	....	....	....	....	....	....	....	...
M	1	2	1		1	2	2	..	1	1		1	..	Stricture of intestines	12	12	...	...	....	1	....	....	....	1	2	....	3	3	1	1	....
M	..	..	..	..	1	..	..	..	..	..	..	..	..	“ of œsophagus	1	1	....	....	1	....	....	....	....	...	....	....	....	...	...	....	....
M	..	..	..	..	..	1	.	..	..	..	..	..	..	Suffocation	3	1	2	....	1	....	....	....	....	....	....	....	....	....	....	....	....
F	..	..	..	1	1	..	..	..	..	..	..	..	.	“	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1
M	1	..	4	4	5	..	1	4	2	1	3	2	..	Suicide	33	27	6	....	....	....	....	....	....	1	2	2	4	10	3	3	2
F	..	1	..		1	..	..	1	..	..	1	2	..	“	....	....	....	....	....	....	....	....	...	1	....	....	1	2	1	....	1
M	..	..	1	..	..	..	..	1	..	..	..	..	..	Syphilis	2	2	....	....	1	....	....	....	....	...	....	....	....	...	....	....	1
M	..	..	..	..	..	..		..	..	1	..	..	..	Tabes Mesenter	2	1	1	....	....	....	....	....	....	....	....	....	....	1	....	....	...
F	..		..	..	..	..	..	..	..	1	..	..	..	“ “	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....
M	1	.	1	..	2	..	1	1	2	1	.	..	..	Teething	15	9	4	....	6	3	....	....	....	....	....	....	....	....	....	....	....
F	..	1	..	..	..	..	..	1	.	..	2	..	..	“	....	....	....	....	2	2	....	....	....	....	....	....	....	...	....	....	....
M	..	..	1	..	..	..	..	..	..	..	..	..	..	Tetanus	1	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....
F	..	..	..	..	..	..		1		..	..	..	..	Thrush	1	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	...
M	..	..	..	..	..	..	.	1	..	..	..	1	..	Tumor	12	2	10	....	....	....	1	....	....	....	....	....	....	1	....	....	....
F	1	3	1	..	..	..	1	1	..	3	.	..	..	“	....	....	....	....	..	....	....	....	....	1	1	1	....	5	2	....	....
M	..	..	..	..	1	..	..	..	..	..			..	Ulcers	2	1	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....
F	..	..	1		..	..	..	..	..	..	..		.	“	....	....	....	....	....	....	....	....	....	..	....	....	....	1	....	....	....
M	..	1	..	1	..	1	..	..	..	..	..	..	..	“ intestine	6	3	3	....	....	....	....	....	....	....	....	....	1	1	1	....	....
F	..	2	..	..	..	1	..	..	..	.	..	..		“ “	....	....	....	....	...	....	....	....	....	....	1	....	1	....	1	....	....
M	..	1	3	..	1	1	.	..	..	2	..	..	..	“ stomach	12	7	4	*1	....	....	..	....	....	....	....	....	2	3	1	....	2
F	.	..	..	1	3	..	..	..	..	..	..	..	..	“ “	....	....	....	....	....	1	....	....	....	....	1	..	1	1	....	....	....
M	3	3	2	1		3	..	..	..	..	..	.	..	Unknown	25	9	13	*3	2	....	1	....	....	1	2	....	1	2	2	....	1
F	..	1	2	1	3	..	1	1	.	1	1	2	..	“	....	....	....	....	4	....	....	....	....	....	...	1	1	3	2	2	....
M	1	..	1	..	..	..	1	..	1	..	..	1	..	Uræmia	6	4	1	*1	....	....	....	....	....	....	1	....	2	1	....	1	....
F	..	..	..	..	.	..		1	..	..	..	..	..	“	....	...	..	....	....	....	....	....	....	....	....	....	....	1	....	....	....
F	.	1	..	1	1	..	1	1	..	..	1	1	..	Uterus disease	7	....	7	....	....	....	....	....	...	1	3	2	1	....	....	....	....

*Classed with males.

TABLE 17—*continued.*

	Months.														Whole Number.				Ages.												
Sex.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Causes of Death.	Totals.	Males.	Females.	Sex not stated.	Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Unknown.
M	..	..	..	2	1	2	2	3	2	..	1	..	..	Whooping-cough..................	25	11	12	*2	10	2	1	....	....	....	....	....	....	....	....	....	....
F	..	..	..	..	..	..	3	5	2	1	1	..	..	"	....	....	....	....	6	6	....	....	....	....	....	....	....	....	....	....	....
M	..	..	..	..	..	..	1	..	..	..	..	..	..	Worms..................	1	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....

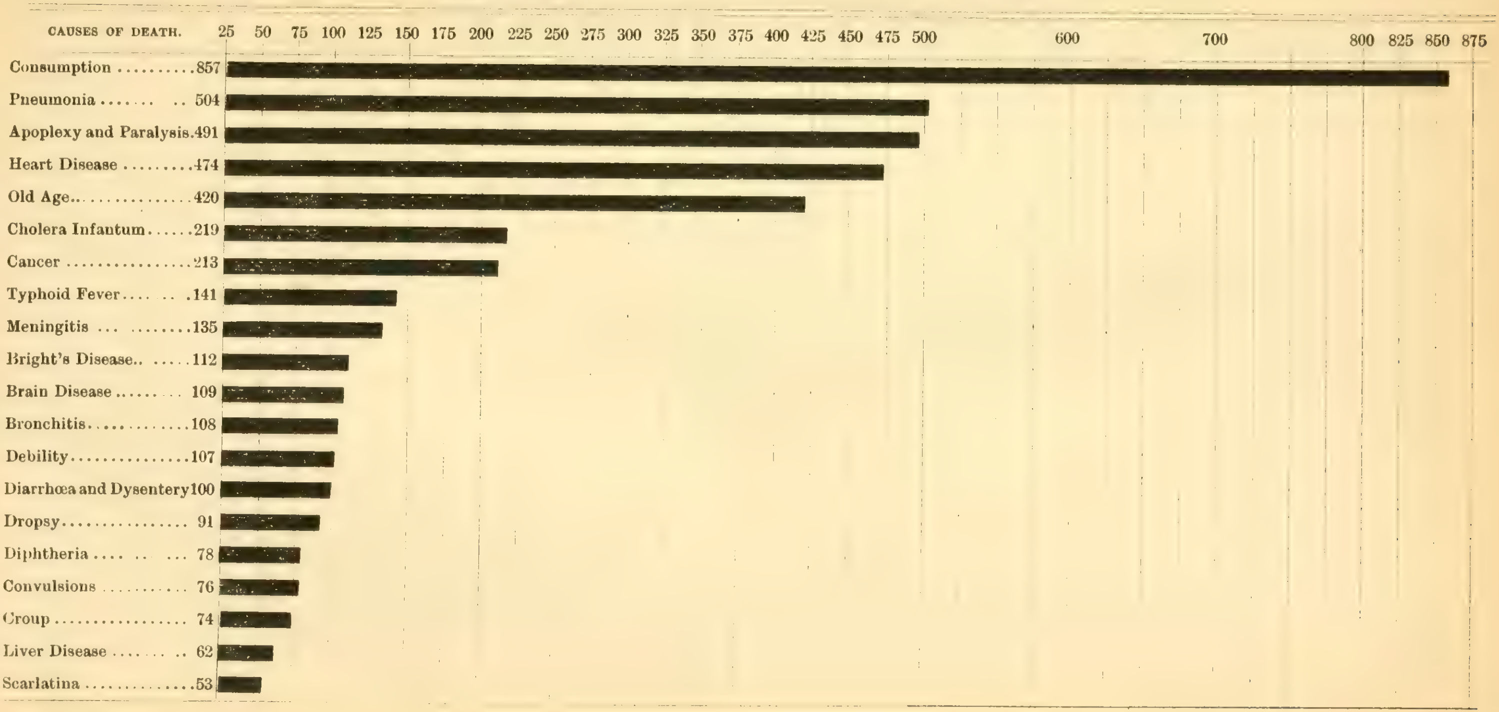
*Classed with males.

TABLE 18.

DEATHS BY SEX, AGE, AND MONTH.

	Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Age not stated.	Total.
January,														
Males	29	23	6	1	7	10	15	18	19	32	41	22	2	225
Females	24	13	4	3	12	34	12	17	14	36	39	36	3	247
Not stated	5	....	....	....	....	....	....	..	....	....	....	....	1	6
February,														
Males	41	27	2	1	8	20	13	14	19	36	45	28	3	257
Females	38	15	8	....	8	23	19	22	16	33	48	49	3	282
Not stated	3	....	....	....	....	....	....	....	1	....	....	....	2	6
March,														
Males	43	29	6	2	8	14	19	19	26	42	57	35	4	304
Females	32	19	6	5	8	25	26	23	35	40	61	53	4	337
Not stated	6	....	....	....	....	....	...	....	...	1	....	....	1	8
April,														
Males	43	14	5	1	9	15	12	22	19	47	56	41	3	287
Females	33	21	2	2	8	35	23	19	21	31	60	65	6	326
Not stated	5	...	....	....	....	....	....	....	....	....	1	....	....	6
May,														
Males	35	21	5	2	6	17	18	16	27	34	42	27	6	256
Females	32	24	4	5	12	15	23	23	13	30	38	29	1	249
Not stated	2	....	....	....	....	....	....	....	....	....	1	....	....	3
June,														
Males	31	17	5	1	9	24	19	20	23	30	33	27	3	242
Females	25	19	6	4	12	30	27	15	23	29	35	40	6	271
Not stated	3	...	....	....	1	....	..	....	...	...	..	...	...	4
July,														
Males	72	17	7	3	1	21	18	9	17	29	28	19	....	241
Females	60	20	7	6	12	20	13	19	11	20	31	30	7	256
Not stated	2	....	....	...	..	....	....	....	....	....	....	....	....	2
August,														
Males	78	26	5	3	3	17	12	10	14	27	26	26	6	253
Females	71	20	5	4	7	23	11	18	16	25	27	40	6	273
Not stated	7	....	....	....	....	....	....		1	....	....	....	....	8
September,														
Males	42	12	7	3	7	9	9	9	25	25	35	22	4	209
Females	41	23	1	10	11	15	26	9	14	29	37	40	4	260
Not stated	4	....	....	....	....	....	....	....	....	....	....	....	....	4
October,														
Males	30	16	2	1	8	10	18	16	19	33	47	27	1	228
Females	33	16	8	7	7	22	17	22	24	39	27	35	....	257
Not stated	3	....	1	...	..	....	....	....	1	1	1	....	...	7
November,														
Males	27	12	3	3	8	20	18	26	24	34	39	19	5	238
Females	20	10	9	5	8	18	19	16	16	26	28	24	4	203
Not stated	2	....	....	....	....	....	....	....	....	....	....	....	....	2
December,														
Males	35	11	9	7	7	13	10	10	20	23	28	23	3	199
Females	30	15	8	1	7	15	18	23	21	17	32	33	1	223
Not stated	....	1	...	...	....	....	....	..	1	....	....	....	...	2
No date,														
Males	1	....	....	....	....	....	....	1	...	2	1	1	3	9
Females	3	....	....	...	..	....	1	....	1	....	1	....	5	11
Not stated	....	....	...	...	..	....	....	...	....	....	....	....	1	1
Total,														
Males	507	225	62	28	81	190	180	190	252	394	478	317	43	2,948
Females	442	217	68	52	112	275	235	226	225	355	463	474	50	3,194
Not stated	42	1	1	....	1		1	....	4	2	3	....	5	59

DIAGRAM I. SHOWING THE COMPARATIVE MORTALITY, BY ABSOLUTE NUMBER OF DECEDENTS, FROM TWENTY PROMINENT CAUSES OF DEATH DURING THE YEAR ENDING DECEMBER 31, 1885.



A BRIEF SUMMARY OF THE RECORD OF DEATHS.

CONSUMPTION,

as in previous years, caused more deaths than any other single disease, 857 being reported from this cause alone; of these 373 were males, 480 females, and 4 sex not stated. The record by month is as follows: January, 71; February, 82; March, 87; April, 79; May, 83; June, 96; July, 64; August, 54; September, 54; October, 65; November, 65; December, 55; month not stated, 2. 31 were under one year of age, 14 between one and five, 4 between five and ten, 11 between ten and fifteen, 87 between fifteen and twenty, 219 between twenty and thirty, 161 between thirty and forty, 109 between forty and fifty, 75 between fifty and sixty, 75 between sixty and seventy, 43 between seventy and eighty, 19 over eighty, and 9 age not stated. The mortality from consumption was 13.81 per cent of the total mortality for the State. In 1883 it was 14.01 per cent. The percentage of consumption to the total mortality in the cities was as follows:

Manchester	13.03
Concord	10.68
Nashua	14.86
Dover	16.17
Portsmouth	12.18
Keene	22.80

TABLE 19.

DEATHS FROM CONSUMPTION, BY AGES, MONTHS, NATIONALITY, AND CIVIL CONDITION.

COUNTIES — SEX.	Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Not stated.	Total.	Grand total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Not stated.	American.	Foreign.	Not stated.	Married.	Single.	Widowed.	Not stated.
Rockingham,																																			
Males	2	..	..	..	3	12	14	11	4	8	3	..	1	58	...	5	6	4	3	7	7	3	7	3	5	5	3	....	101	7	26	26	17	8	7
Females	3	..	..	1	5	18	13	12	10	7	3	3	1	76	134	11	5	10	5	8	8	3	3	4	9	3	7	....	...	....	....	28	25	15	8
Strafford,																																			
Males	4	1	..	..	3	7	8	8	3	3	1	..	..	38	....	1	2	6	3	6	7	2	..	2	3	3	3	....	68	23	5	22	12	2	2
Females	3	1	..	1	8	17	14	7	2	2	2	1	..	58	96	5	5	8	3	5	5	8	2	3	4	7	3	....	....	....	....	26	27	4	1
Belknap,																																			
Males	1	..	..	..	..	7	2	4	3	4	1	2	1	25	....	2	2	2	1	2	6	1	1	..	2	4	2	....	42	4	4	9	9	7	....
Females	1	2	..	1	4	2	3	2	2	1	5	..	2	25	50	1	..	1	4	1	5	2	3	3	2	1	2	....	....	....	....	6	13	6	....
Carroll,																																			
Males	..	..	..	..	..	3	1	3	3	..	1	2	..	13	....	..	1	2	1	1	1	2	4	1	..	...	....	....	29	1	3	7	4	2	....
Females	..	..	..	1	..	7	4	2	2	1	1	2	..	20	33	3	3	1	2	1	2	3	..	4	..	....	1	....	....	....	....	11	4	4	1
Merrimack,																																			
Males	..	1	..	..	4	13	10	4	6	6	2	.	1	47	....	4	7	3	3	7	7	2	2	4	3	2	3	....	90	8	4	17	22	7	1
Females	..	1	..	3	9	17	8	7	4	4	1	1	..	55	102	10	4	9	2	5	7	4	2	3	4	2	3	....	....	....	....	22	25	7	1
Hillsborough,																																			
Males	10	4	..	..	12	23	17	12	12	6	4	2	..	105	....	8	9	7	14	8	4	9	6	12	8	12	6	....	153	63	17	32	37	8	25
Females	4	..	3	3	12	41	29	13	4	11	5	2	1	128	233	10	17	11	16	11	13	9	8	7	11	8	7	....	....	....	....	34	39	21	34
Not stated	..	..	..	..	1	....	....	....	2	..	..	..	..	....	....	..	..	..	..	..	..	..	..	..	..	1	1	....	....	....	....	1	1	....	1
Cheshire,																																			
Males	1	..	1	..	4	5	6	3	2	3	1	..	..	27	....	1	6	1	4	3	3	1	3	2	1	1	....	....	62	6	7	11	11	2	2
Females	1	1	..	..	11	7	11	5	5	4	..	1	2	48	75	1	5	3	6	5	6	6	5	1	3	3	4	....	....	....	....	20	18	9	1
Not stated	1	..	..	..	..	....	....	....	..	..	..	..	..	....	....	1	..	..	..	..	..	..	..	..	..	....	....	....	....	....	....	....	1	....	....

Sullivan,																																			
Males	..	..	..	1	1	6	4	....	2	2	4	1	.	21	....	1	2	3	2	1	3	3	1	..	1	3	1	....	30	3	3	9	10	1	1
Females	..	..	..	..	2	6	1	3	1	..	2	..	..	15	36	2	3	1	..	..	1	..	1	..	3	1	3	....	....	....	....	9	6	....	....
Grafton,																																			
Males	..	1	..	..	1	6	6	5	4	4	2	1	..	30	....	1	2	8	1	4	4	..	2	1	1	2	3	1	59	4	7	22	6	2	....
Females	..	..	..	..	3	16	4	4	2	7	3	1	..	40	70	3	3	2	5	4	5	1	3	2	5	4	2	1	....	....	....	21	13	3	3
Coös,																																			
Males	..	1	..	..	1	3	1	2	1	2	2	.	..	13	....	1	..	2	2	..	2	4	..	1	..	1	....	....	23	2	3	8	5	....	....
Females	..	1	..	..	3	3	5	2	1	..	..	..	..	15	28	..	..	3	2	4	..	1	1	1	..	2	1	....	....	....	....	9	6	....	....
Total for State	31	14	4	11	87	219	161	109	75	75	43	19	9	....	857	71	82	87	79	83	96	64	54	54	65	65	55	2	657	121	79	350	311	108	88

TABLE 20.

DEATHS FROM PULMONARY CONSUMPTION, BY SEASONS AND AGES, 1885, FOR THE CITY OF CONCORD.

MONTHS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Not stated.	Total.	American.	Foreign.	Not stated.
	4	2	4	2	4	4	1		3	1	2	1					
Quarters	10			10			4			4				28			
	Under 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Not stated.						
Ages			3	8	5	5	6	1						28			
Nativity															25	1	2
Males														17			
Females														11			
Percentage to total mortality of city	10.68																

TABLE 21.

DEATHS FROM PULMONARY CONSUMPTION, BY SEASONS AND AGES, 1885, FOR THE CITY OF MANCHESTER.

MONTHS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Not stated.	Total.	American.	Foreign.	Not stated.
	11	11	8	14	13	6	10	7	7	10	5	5					
Quarters	30			33			24			20				107			
	Under 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Not stated.						
Ages	14		10	31	22	14	6	6	3		1			107			
Nativity															57	47	3
Males														43			
Females														62			
Not stated														2			
Percentage to total mortality of city	13.03																

TABLE 22.

DEATHS FROM PULMONARY CONSUMPTION, BY SEASONS AND AGES, 1885, FOR THE CITY OF NASHUA.

MONTHS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Not stated.	Total.	American.	Foreign.	Not stated.
	4	10	5	4	2	6	2		5	4	6	3					
Quarters	19			12			7			13				51			
	Under 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Not stated.						
Ages	5	2	9	15	7	3	6	4						51			
Nativity															29	14	8
Males														25			
Females														25			
Not stated														1			
Percentage to total mortality of city	14.86																

TABLE 23.

DEATHS FROM PULMONARY CONSUMPTION, BY SEASONS AND AGES, 1885, FOR THE CITY OF KEENE.

MONTHS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Not stated.	Total.	American.	Foreign.	Not stated.
	1	3	1	6	2	3	3	2	2	1	2						
Quarters	5			11			7			3				26			
	Under 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Not stated.						
Ages	1		5	3	7	4	4	1	1					26			
Nativity															24	2	
Males														9			
Females														17			
Percentage to total mortality of city	22.80																

TABLE 24.

DEATHS FROM PULMONARY CONSUMPTION, BY SEASONS AND AGES, 1885, FOR THE CITY OF PORTSMOUTH.

MONTHS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Not stated.	Total.	American	Foreign.	Not stated.
	6	2	2	4	4		2	2	2	2	1	2					
Quarters	10			8			6			5				29			
	Under 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Not stated.						
Ages	1		4	8	5	4	4	3						29			
Nativity															18	4	7
Males														14			
Females														15			
Percentage to total mortality of city	12.18																

TABLE 25.

DEATHS FROM PULMONARY CONSUMPTION, BY SEASONS AND AGES, 1885, FOR THE CITY OF DOVER.

MONTHS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Not stated.	Total.	American.	Foreign.	Not stated.
	4	4	11	3	6	3	3	1	2	5	5	2					
Quarters	19			12			6			12				49			
	Under 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Not stated.						
Ages	6		5	15	13	6	1	2	1					49			
Nativity															33	13	3
Males														17			
Females														32			
Percentage to total mortality of city	16.17																

TABLE 26.

CONSUMPTION, SHOWING OCCUPATIONS, BY MONTHS, AGES, AND SEX.

Sex.	Months.													Occupations.	Whole Number.				Ages.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.		Totals.	Males.	Females.	Sex not stated.	Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Unknown.
M	1													Artist	1	1								1							
M			1											Barber	1	1									1						
M				1							1			Blacksmith	2	2										1			1		
M						1								Blind-maker	1	1								1							
M	1													Boiler-maker	1	1									1						
M								2						Book-keeper	2	2									2						
F					1									Box-maker	1		1							1							
M												1		Butcher	1	1									1						
M	1	2		2			1				1	1		Carpenter	8	8							1	2	1	2		2			
M		1							1					Carriage-worker	2	2											2				
M		1		1										Clergyman	2	2									2						
M			2		1	1		1			1			Clerk	9	6	3						1	4				1			
F		1								1	1			"										3							
F	1													Cloak-maker	1		1									1					
M	1													Confectioner	1	1												1			
M				1				1						Currier	2	2								1			1				
F	1	1	2	2	3	2				1		1		Domestic	13		13						3	5	1	1	1	2			
F	2		1							1				Dressmaker	4		4							1	1	2					
M						2			1					Druggist	3	3									3						
M					1									Dyer	1	1											1				
M								1						Electrician	1	1									1						
M		1		1				1						Engineer	3	3									1			1	1		
M					1									Engraver	1	1									1						
M						1			1					Express-messenger	2	2								2							
M	5	6	11	7	11	17	1	7	5	6	9	3	1	Farmer	89	89								13	13	15	13	16	14	4	1
M				1							1			Foundryman	2	2							1				1				

TABLE 26 — *continued.*

Sex.	Months. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	OCCUPATIONS.	Whole Number. Totals.	Males.	Females.	Sex not stated.	Ages. Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Unknown.
M	1	..	..	..	..	1	..	..	..	..	..	..	..	Hostler	2	2	....	....	....	....	....	....	....	1	1	....	....	....	...	....	....
F	1	4	7	1	1	4	..	1	1	2	4	1	..	Housekeeper	27	....	27	....	....	....	....	...	....	3	9	5	2	4	2	1	1
F	14	22	16	16	13	21	13	10	13	20	13	13	1	Housewife	185	...	185	....	....	....	....	...	10	50	47	29	18	16	10	4	1
M	2	2	3	5	4	..	4	4	2	..	1	1	..	Infantile	46	28	18	1	20	7	1	....	....	....	....	....	....	....	....	...	....
F	2	..	2	4	3	1	2	1	1	..	..	2	..	"	....	....	....	....	12	6	....	....	....	...	....	....	....	....	....	....	....
M	..	..	..	..	..	.	..	2	..	..	..	..	..	Jeweler	2	2	....	....	....	....	....	....	....	2	....	....	....	....	....	...	....
M	3	5	1	2	3	7	3	1	2	3	6	3	..	Laborer	39	39	....	....	....	....	....	....	6	10	5	7	6	4	....	....	1
M	..	..	..	1	..	1	..	..	..	..	..	..	..	Landlord	2	2	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....
M	..	..	..	2	..	..	..	..	..	..	..	..	..	Machinist	2	2	....	....	...	....	....	....	....	...	1	....	1	....	....	....	....
M	..	2	..	1	..	..	1	..	..	..	2	1	..	Mechanic	7	7	....	....	....	....	....	....	2	3	....	1	....	1	....	....	....
M	..	2	..	..	..	1	..	..	1	..	..	1	..	Merchant	5	5	....	...	....	....	....	....	....	1	....	2	1	....	....	1	....
F	..	..	..	..	..	..	..	..	..	1	..	..	..	Milliner	1	...	1	....	....	....	....	....	....	1	....	....	....	....	....	....	...
M	1	2	3	1	3	2	..	1	..	..	1	1	..	Mill operative	27	15	12	....	....	....	...	....	3	7	1	2	2	....	....	....	....
F	..	2	3	..	..	..	1	1	..	1	1	3	..	" "	....	....	....	....	....	....	....	....	2	6	3	1	....	....	....	....	....
M	..	..	1	..	..	..	..	..	1	..	..	..	..	None	5	2	3	....	....	....	....	....	...	1	....	....	....	....	....	1	....
F	..	..	..	..	3	..	..	..	..	..	..	..	..	"	....	....	....	...	...	....	....	....	....	...	2	1	....	....	....	....	....
M	5	9	6	3	9	8	12	5	6	10	4	7	..	Not stated	272	81	*188	3	....	....	....	1	12	24	15	12	10	5	3	1	1
F	22	14	14	18	24	20	14	14	12	16	10	10	..	" "	....	....	....	....	....	....	3	10	38	55	25	15	10	14	9	5	4
F	..	..	..	..	..	2	..	..	..	..	..	..	..	Nurse	2	....	2	....	....	....	....	...	....	....	....	1	1	....	....	....	....
M	..	..	..	1	..	..	..	..	..	..	..	..	..	Painter	1	1	....	...	....	....	....	....	....	....	....	1	....	....	....	....	....
M	..	..	1	..	..	..	..	..	..	..	..	..	..	Photographer	1	1	....	....	....	....	....	....	....	...	....	....	1	....	....	....	....
M	..	..	..	..	1	..	1	..	..	..	1	1	..	Physician	4	4	....	....	....	....	....	....	. ..	2	1	....	....	1	....	....	....
M	..	..	..	1	..	..	..	..	..	..	..	..	..	Picker-tender	1	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....
M	..	..	1	..	..	..	..	..	..	..	..	..	..	Polisher	1	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....
M	..	..	..	..	..	..	..	..	..	2	..	..	..	Printer	2	2	....	....	....	...	....	....	....	....	1	1	....	....	....	....	....
M	..	..	1	..	..	..	..	..	..	..	..	..	..	Print-works	1	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....

* Twenty-nine were widows.

M							1							Quarryman	1	1											1				
M								1						Railroad conductor	1	1										1					
M				1						1				Railroad man	2	2									1	1					
M	1											1		Salesman	2	2								1	1						
M		1												Scythe-grinder	1	1											1				
F	1						1							Seamstress	2		2									2					
M											1			Shoe-cutter	1	1								1							
M	1	2	5	1	2	4	1			1	3	1		Shoemaker	21	21							1	3	7	3	2	2	2	1	
F				1										Shoe-stitcher	1		1							1							
M											1			Stable-keeper	1	1										1					
M								1						Station agent	1	1												1			
F												1		Stenographer	1		1							1							
M									1		1			Stone-cutter	2	2									1			1			
M				1										Stone-mason	1	1								1							
M							1	1	1					Student	6	3	3						2	1							
F			1				1				1			,,							1		2								
M							1							Switchman	1	1								1							
F		1										1		Tailoress	2		2								1				1		
F	2	1	1		1		1		2			1		Teacher	9		9						1	5	2	1					
M	2													Teamster	2	2									1			1			
M								1						Telegraph operator	1	1								1							
M					1				1					Tinsmith	2	2											1	1			
M			1											Type-setter	2	1	1							1							
F						1								“									1								
M		1												Veterinary surgeon	1	1										1					
M			1											Watch-maker	1	1									1						
F		1	1	1										Weaver	3		3							2	1						

PNEUMONIA

ranks third on the list, there being 504 deaths recorded under this head against 436 in 1884, 244 males, 259 females, and 1 sex not stated; 69 were under one year of age, 49 between one and five, 8 between five and ten, 4 between ten and fifteen, 11 between fifteen and twenty, 15 between twenty and thirty, 27 between thirty and forty, 32 between forty and fifty, 37 between fifty and sixty, 72 between sixty and seventy, 105 between seventy and eighty, 74 over eighty, and 1 age not stated; 53 died in January, 59 in February, 101 in March, 95 in April, 35 in May, 25 in June, 13 in July, 10 in August, 10 in September, 33 in October, 38 in November, and 32 in December.

APOPLEXY AND PARALYSIS.

There were 491 deaths from these two causes, 234 males, 256 females, and 1 with sex not stated, which was classed with the males; 2 of the decedents were under one year of age, 2 between one and five, 2 between five and ten, 2 between ten and fifteen, 10 between twenty and thirty, 15 between thirty and forty, 33 between forty and fifty, 52 between fifty and sixty, 92 between sixty and seventy, 180 between seventy and eighty, 97 over eighty, and 4 age not stated; 43 died in January, 49 in February, 39 in March, 51 in April, 31 in May, 45 in June, 39 in July, 38 in August, 36 in September, 50 in October, 41 in November, 29 in December.

HEART DISEASE.

There were 474 deaths from heart disease, 241 males and 233 females; 12 were under one year of age, 5 between one and five, 1 between five and ten, 5 between ten and fifteen, 5 between fifteen and twenty, 17 between twenty and thirty, 19 between thirty and forty, 41 between forty and fifty, 56 between fifty and sixty, 122 between sixty and seventy, 125 between seventy and eighty, 61 over eighty, and 5 age not stated; 32 died in January, 37 in February, 46 in March, 47 in April, 37 in May, 38 in June, 42 in July, 35 in August, 43 in September, 39 in October, 44 in November, 34 in December.

OLD AGE.

There are 420 deaths registered under this disease, 179 males, 240 females, and 1 with sex not stated; of these 1 was between fifty and sixty years of age, 7 between sixty and seventy, 89 between seventy and eighty, 321 over eighty, and 2 age not stated. The oldest decedent was a male 105 years of age. 41 deaths occurred in January, 35 in February, 56 in March, 58 in April, 32 in May, 28 in June, 24 in July, 38 in August, 29 in September, 25 in October, 20 in November, 34 in December.

CHOLERA INFANTUM.

There were 219 deaths from this cause, 110 males and 109 females; 186 were under one year of age, and 33 between one and five; 1 died in February, 1 in March, 3 in April, 3 in May, 5 in June, 75 in July, 80 in August, 38 in September, 9 in October, 3 in December, and 1 not stated. Following is the total mortality from the disease in the cities of the State:

Manchester	88
Dover	15
Nashua	13
Portsmouth	9
Concord	5
Keene	2
Total	132

TABLE 27.

CHOLERA INFANTUM, BY AGES, SEX, AND MONTHS, PARTICULARLY SHOWING NUMBER OF DECEDENTS IN THE CITIES AND LARGE TOWNS.

	Under 1.	1 to 5.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Not stated.	Total.	Grand total.
Concord,																	
Males	1	1	..	..	..	....	....	....	1	1	....	....	..	....	....	2	....
Females	....	3	..	..	..	....	....	....	....	1	2	....	..	....	....	3	5
Manchester,																	
Males	39	6	..	..	..	2	....	1	28	9	2	....	..	3	....	45	....
Females	41	2	..	..	..	....	1	....	22	15	4	1	..	....	....	43	88
Nashua,																	
Males	5	2	..	..	..	....	....	....	5	....	1	1	..	....	....	7	....
Females	5	1	..	..	..	....	....	....	2	3	1	....	..	....	....	6	13
Keene,																	
Males	2	....	..	..	..	....	....	....	....	2	....	....	..	....	....	2	....
Females	....	....	..	..	..	....	....	....	....	....	....	....	..	....	....	....	2
Portsmouth,																	
Males	3	....	..	..	..	....	....	....	....	1	1	1	..	....	....	3	....
Females	3	3	..	..	..	....	....	....	1	3	1	1	..	....	....	6	9
Dover,																	
Males	6	....	..	..	..	....	....	....	2	2	2	....	..	....	....	6	....
Females	7	2	..	..		....	....	....	1	5	3	....	..	....	....	9	15
Canaan,																	
Males	1	....	..	..	..	....	....	....	....	1	....	....	..	....	....	1	....
Females	2	....	..	..	..	....	....	....	....	2	....	....	..	....	....	2	3
Claremont,																	
Males	....	....	..	..	..	....	....	....	....	....	....	....	..	....	....	....	....
Females	1	2	..	..	..	....	....	....	....	1	2	....	..	....	....	3	3
Laconia,																	
Males	3	....	..	..	..	....	....	1	....	1	....	1	..	....	....	3	....
Females	....	....	..	..	..	....	....	....	....	....	....	....	..	....	....	....	3
Lebanon,																	
Males	2	....	..	..	..	....	....	....	....	2	....	....	..	....	....	2	....
Females	1	....	..	..	..	....	....	....	....	....	1	....	..	....	....	1	3
Newmarket,																	
Males	2	....	..	..	..	....	....	....	2	....	....	....	..	....	....	2	....
Females	1	....	..	..	..	....	....	....	1	....	....	....	..	....	....	1	3
Pembroke,																	
Males	1	....	..	..	..	....	....	....	....	....	1	....	..	....	....	1	....
Females	2	1	..	..	..	....	....	1	....	....	2	....	..	....	....	3	4
Rollinsford,																	
Males	2	1	..	..	..	....	....	....	1	1	1	....	..	....	....	3	....
Females	1	....	..	..	..	....	....	....	....	....	....	....	..	....	1	1	4
Somersworth,																	
Males	3	....	..	..	..	....	....	1	2	....	....	....	..	....	....	3	....
Females	4	....	..	..	..	....	....	....	1	3	....	....	..	....	....	4	7
Stoddard,																	
Males	2	....	..	..	..	....	....	....	....	2	....	....	..	....	....	2	....
Females	1	....	..	..	..	....	....	....	1	....	....	....	..	....	....	1	3
Remaining towns,																	
Males	23	5	..	..	..	....	....	....	....	....	....	....	..	....	....	28	....
Females	22	4	..	..	..	....	....	....	....	....	....	....	..	....	....	26	54

CANCER.

There were 213 deaths from cancer, 74 males and 139 females. Cancer, 130; cancer of bowels, 6; cancer of brain, 1; cancer of breast, 5; cancer of face, 1; cancer of liver, 12; cancer of rectum, 3; cancer of stomach, 38; cancer of tongue, 1; cancer of uterus, 16. Of these, 24 died in January, 19 in February, 20 in March, 23 in April, 10 in May, 15 in June, 13 in July, 13 in August, 11 in September, 21 in October, 22 in November, 21 in December, and 1 not stated.

TYPHOID FEVER.

There were reported 141 deaths from this cause, 67 males and 74 females. This included 4 deaths from "fever," 5 from "bilious fever," 5 from "gastric fever," and 3 from "typhus fever," which would leave 124 from typhoid fever, as reported. Of the decedents, 2 were under one year of age, 7 between one and five, 8 between five and ten, 11 between ten and fifteen, 21 between fifteen and twenty, 35 between twenty and thirty, 14 between thirty and forty, 8 between forty and fifty, 8 between fifty and sixty, 10 between sixty and seventy, 12 between seventy and eighty, 3 over eighty, and 2 not stated; 8 died in January, 8 in February, 13 in March, 7 in April, 12 in May, 13 in June, 3 in July, 8 in August, 28 in September, 17 in October, 13 in November, 11 in December.

MENINGITIS.

135 deaths are recorded under this disease, 70 males, 64 females, and 1 sex not stated. Of these, 37 were under one year of age, 38 between one and five, 11 between five and ten, 5 between ten and fifteen, 8 between fifteen and twenty, 11 between twenty and thirty, 10 between thirty and forty, 2 between forty and fifty, 5 between fifty and sixty, 1 between sixty and seventy, 5 between seventy and eighty, 2 age not stated; 11 died in January, 15 in February, 10 in March, 14 in April, 9 in May, 15 in June, 8 in July, 15 in August, 7 in September, 11 in October, 11 in November, 9 in December.

BRIGHT'S DISEASE.

112 deaths from this disease, 70 males and 42 females; 2 were under one year of age, 2 between one and five, 5 between ten and fifteen, 3 between fifteen and twenty, 9 between twenty and thirty, 17 between thirty and forty, 12 between forty and fifty, 14 between fifty and sixty, 22 between sixty and seventy, 20 between seventy and eighty, 5 over eighty, and 1 age not stated; 7 died in January,

8 in February, 13 in March, 11 in April, 12 in May, 12 in June, 8 in July, 8 in August, 8 in September, 7 in October, 12 in November, 6 in December.

BRAIN DISEASE.

There were 109 deaths recorded under this head, 51 males and 58 females; 10 were under one year of age, 7 between one and five, 2 between five and ten, 1 between ten and fifteen, 1 between fifteen and twenty, 5 between twenty and thirty, 3 between thirty and forty, 1 between forty and fifty, 17 between fifty and sixty, 23 between sixty and seventy, 24 between seventy and eighty, 14 over eighty, and 1 age not stated; 9 died in January, 6 in February, 10 in March, 8 in April, 16 in May, 7 in June, 3 in July, 10 in August, 11 in September, 7 in October, 16 in November, 6 in December. "Softening of the brain" is included under this head.

BRONCHITIS.

Under this head there are 108 deaths, 41 males and 67 females; 28 under one year of age, 12 between one and five, 2 between five and ten, 1 between ten and fifteen, 2 between twenty and thirty, 4 between thirty and forty, 1 between forty and fifty, 3 between fifty and sixty, 10 between sixty and seventy, 19 between seventy and eighty, 25 over eighty, and 1 age not stated; 14 died in January, 12 in February, 14 in March, 13 in April, 15 in May, 10 in June, 2 in July, 2 in August, 7 in September, 10 in October, 4 in November, 5 in December.

DEBILITY.

There were 107 deaths from this cause, 55 males and 52 females; 48 were under one year of age, 3 between one and five, 4 between thirty and forty, 4 between forty and fifty, 1 between fifty and sixty, 12 between sixty and seventy, 18 between seventy and eighty, 17 over eighty. Of these, 5 died in January, 10 in February, 10 in March, 13 in April, 11 in May, 9 in June, 12 in July, 11 in August, 9 in September, 4 in October, 8 in November, 5 in December.

DIARRHŒA AND DYSENTERY.

One hundred deaths occurred from these diseases, 46 males and 54 females; 24 were under one year of age, 16 between one and five, 3 between five and ten, 2 between twenty and thirty, 3 between thirty and forty, 6 between forty and fifty, 5 between fifty and sixty, 14 between sixty and seventy, 14 between seventy and eighty, 12 over eighty, and 1 not stated; 5 died in January, 2 in February, 3 in

April, 3 in May, 9 in June, 16 in July, 26 in August, 20 in September, 9 in October, 3 in November, and 4 in December. The deaths from "cholera morbus" are included under this head.

DROPSY.

There were 91 deaths from dropsy, 39 males and 52 females; 2 were between one and five years of age, 2 between ten and fifteen, 2 between twenty and thirty, 3 between thirty and forty, 6 between forty and fifty, 12 between fifty and sixty, 20 between sixty and seventy, 26 between seventy and eighty, 13 over eighty, and 5 not stated; 9 died in January, 5 in February, 15 in March, 4 in April, 6 in May, 12 in June, 4 in July, 8 in August, 1 in September, 11 in October, 8 in November, 7 in December, and 1 not stated.

DIPHTHERIA.

Seventy-eight deaths are recorded under this head, 37 males and 41 females; 10 were under one year of age, 32 between one and five, 22 between five and ten, 5 between ten and fifteen, 3 between fifteen and twenty, 4 between twenty and thirty, 1 between forty and fifty, 1 between fifty and sixty; 13 died in January, 5 in February, 3 in March, 2 in April, 5 in May, 2 in June, 3 in July, 6 in August, 6 in September, 9 in October, 12 in November, 12 in December.

TABLE 28.

DEATHS FROM DIPHTHERIA, BY SEASONS AND AGES, 1885.

MONTHS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	13	5	3	2	5	2	3	6	6	9	12	12
Quarters	21			9			15			33		
Percentages	26.92			11.54			19.23			42.31		
Ages	Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.
Deaths	10	32	22	5	3	4		1	1			
Total deaths	78											
Under 10 years of age	64											

CONVULSIONS.

There were 76 deaths from this cause, 31 males, 43 females, and 2 sex not stated; 32 were under one year of age, 35 between one and five, 1 between ten and fifteen, 3 between fifteen and twenty, 1 between thirty and forty, 4 between forty and fifty; 3 died in January, 6 in February, 9 in March, 7 in April, 1 in May, 7 in June, 5 in July, 11 in August, 7 in September, 6 in October, 7 in November, 6 in December, and 1 not stated.

CROUP.

There were 74 deaths from croup, 42 males, 31 females, and 1 not stated; 20 were under one year of age, 41 between one and five, 9 between five and ten, 1 between twenty and thirty, 2 between thirty and forty, 1 between fifty and sixty; 9 died in January, 11 in February, 15 in March, 3 in May, 3 in June, 1 in July, 4 in August, 3 in September, 9 in October, 8 in November, 8 in December.

TABLE 29.

DEATHS FROM CROUP, BY SEASONS AND AGES, 1885.

Months.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	9	11	15		3	3	1	4	3	9	8	8
Quarters	35			6			8			25		
Percentages	47.30			8.11			10.81			33.78		
Ages	Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.			
Deaths	20	41	9			1	2		1			
Total deaths	74			....			....			....		
Under 10 years of age	70			....			....			....		

LIVER DISEASE.

There were 62 deaths from this disease, 32 males and 30 females; 1 was between five and ten years of age, 2 between twenty and thirty, 5 between thirty and forty, 8 between forty and fifty, 12 between fifty and sixty, 17 between sixty and seventy, 13 between seventy and eighty, 4 over eighty; 7 died in January, 4 in February, 7 in March, 5 in April, 8 in May, 7 in June, 8 in July, 5 in August, 3 in September, 2 in October, 4 in November, 2 in December.

SCARLATINA.

There were 53 deaths from scarlatina, 22 males and 31 females; 5 were under one year of age, 30 between one and five, 11 between five and ten, 4 between ten and fifteen, 1 between fifteen and twenty, 1 between twenty and thirty, 1 between thirty and forty; 2 died in January, 5 in February, 7 in March, 6 in April, 10 in May, 4 in June, 3 in July, 2 in August, 3 in September, 2 in October, 4 in November, 5 in December.

TABLE 30.

DEATHS FROM SCARLET FEVER, BY COUNTIES, 1885.

COUNTIES.	Deaths from Scarlatina, 1885.	COUNTIES.	Deaths from Scarlatina, 1885.
Rockingham	3	Hillsborough	28
Strafford	6	Cheshire	2
Belknap	2	Sullivan	....
Carroll	....	Grafton	7
Merrimack	4	Coös	1

TABLE 31.

DEATHS FROM SCARLET FEVER, BY SEASONS AND AGES, 1885.

MONTHS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	2	5	7	6	10	4	3	2	3	2	4	5
Quarters	14			20			8			11		
Percentages	26.41			37.74			15.09			20.75		
Ages	Under 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.					
Deaths	5	30	11	4	1	1	1					
Total deaths	53			....			....			....		
Under 10 years of age	46			....			....			....		

The summary of diseases might be carried still further, but it is thought to be unnecessary. Special tables on other diseases can be constructed from the tables given in the main part of the report, excepting possibly data in reference to occupations, by any one who desires to study a given subject more in detail than is given in any single table. It is believed, however, that the present arrangement will show all the facts desired, although several tables may have to be consulted for that purpose. It is to be regretted that the reports of the several towns and cities are too incomplete upon the subject of occupation from which to compile tables that would be reliable in connection with general causes of death.

Respectfully submitted.

IRVING A. WATSON,
Registrar of Vital Statistics.

APPENDIX.

NAMES OF CAUSES OF DEATH.*

It should be stated that the nomenclature of diseases in the nosological arrangement on the following pages is not intended to include the names of the whole list of morbid phenomena affecting the human organism, but the names of such only as are directly the cause of death, or such as ordinarily predispose to or set in motion the morbid processes that end in death.

In the construction of the classification now adopted, use has been made of the results and conclusions of a committee of the Royal College of Physicians, of England (who have been engaged for several years in a revision of the British nomenclature of diseases), as far as such conclusions have been ascertained from brief reports in different medical journals, and from such other sources as were accessible (the complete report not having yet been issued), and from examination of the classifications in use in different countries in Europe and America.

It should be said that all these classifications have been and are essentially alike, that all have been based designedly on observed facts and most advanced conclusions in relation to pathological processes and morbid conditions, inductive, causative, progressive, and ultimate.

The statistical nosology will consist of two lists of causes of death.

A TABULAR LIST AND SUPPLEMENTAL LIST.

The tabular list comprises the chief or primary causes of death which will be used in Table 13, in the preparation of the Registrar's annual reports, and will, therefore, include all those named in the supplemental list, when the final arrangement is completed.

The supplemental list is subordinate to the tabular list, and contains synonyms, or names of related diseases, which may be actually, or are supposed to be, causes of death, and which are in addition to those in the tabular list, and which are often found in physicians' certificates of death. These will all have a place, in alphabetical order, in Table 18, and will be variously grouped under different heads in Table 13, as the figure which precedes each cause in the supplemental list will correspond with the figure of the head in the tabular list under which that cause is placed.

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* Taken largely from the list prepared by the State Registrar of Rhode Island.

NOMENCLATURE OF CAUSES OF DEATH.

CLASSES.

I. General Diseases. — A. Specific and febrile. (Zymotic.)
II. General Diseases. — B. Cachectic. (Constitutional.)
III. Special Diseases. — A. Functional or organic. (Local.)
IV. Special Diseases. — B. Developmental. (Developmental.)
V. Violent Deaths. — From injuries. (Violence.)

SUB-GROUPS OR ORDERS.

Class I. — Zymotic Diseases.

Order one, Miasmatic. Order two, Enthetic. Order three, Dietic. Order four, Parasitic.

Class II. — Constitutional Diseases.

Order one, Diathetic. Order two, Tubercular.

Class III. — Local Diseases.

Order one, Diseases of the Nervous System. Order two, Organs of Circulation. Order three, Organs of Respiration. Order four, Organs of Digestion. Order five, Urinary Organs. Order six, Reproductive Organs. Order seven, Osseous and Locomotory Organs. Order eight, Integumentary System.

Class IV. — Developmental Diseases.

Order one, Of Children. Order two, Of Women. Order three, Of Old Age. Order four, Of Nutrition.

Class V. — Violent Deaths.

Order one, Accidents and Negligence. Order two, Homicide. Order three, Suicide.

CLASS I. — ZYMOTIC DISEASES.

TABULAR LIST.

For Table 13 of the Registration Report.

ORDER ONE. — MIASMATIC.

I. One. — 1. Carbuncle.
2. Cholera, Asiatic.
3. Cholera, sporadic.
4. Cholera infantum.
5. Cholera morbus.
6. Croup (pseudo membranous).
7. Diphtheria.
8. Diarrhœa.
9. Dysentery.
10. Erysipelas.
11. Fever, bilious.
12. Fever, cerebro-spinal.
13. Fever, intermittent.
14. Fever, malarial.
15. Fever, typhoid.
16. Fever, typho-malarial.
17. Fever, unspecified.
18. Fever, yellow.
19. Influenza (epidemic).
20. Measles.
21. Mumps.
22. Metria (puerperal fever).
23. Pertussis.
24. Tonsilitis.
25. Scarlatina.
26. Small-pox.
27. Varicella.

ORDER TWO. — ENTHETIC.

I. Two. — 1. Glanders.
2. Gonorrhea.
3. Hydrophobia.
4. Malignant pustule.
5. Septicæmia.
6. Syphilis.

SUPPLEMENTAL LIST.

Synonyms or Related Diseases.

ORDER ONE. — MIASMATIC.

I. One. — 1. Anthrax.
Gangrenous boil.
4. Entero-colitis, Gastro-enteritis, } Infantile.
10. Hospital gangrene.
Pyemia.
Phagadena.
Phlegmon.
15. Infantile fever.
Typhus fever.
20. Rotheln.
21. Parotitis.
22. Child-bed fever.
23. Whooping-cough.
24. Quinsy.
25. Scarlet fever.
Angina maligna.
26. Varioloid.
27. Chicken-pox.
Miliaria.

ORDER TWO. — ENTHETIC.

I. Two. — 2. Stricture of the urethra.
Gonorrheal ophthalmia.
5. Necusia.

CLASS I. — ZYMOTIC DISEASES — *Continued.*

TABULAR LIST.	SUPPLEMENTAL LIST.
ORDER THREE. — DIETIC.	ORDER THREE. — DIETIC.
I. Three. — 1. Alcoholism. 2. Delirium tremens. 3. Inanition. 4. Purpura and scurvy.	I. Three. — 1. Intemperance.] 3. Privation. Starvation. Neglect.
ORDER FOUR. — PARASITIC.	ORDER FOUR. — PARASITIC.
I. Four. — 1. Apthæ. 2. Worms. 3. Other parasites.	I. Four. — 1. Thrush. 2. Tapeworm. Trichianasis. 3. Scabies. Hydatids. Porrigo, favus, etc.

CLASS II. — CONSTITUTIONAL DISEASES.

ORDER ONE. — DIATHETIC.	
II. One. — 1. Gout. 2. Dropsy. 3. Anæmia. 4. Cancer, various. 5. Cancer of breast. 6. Cancer of stomach. 7. Cancer of uterus. 8. Noma (canker). 9. Mortification. 10. Rheumatism	II. One. — 2. Anasarca. 3. Leucocythæmia. Chlorosis. 4. Soft cancer. Epithelioma. Melanosis. Lupus. Other kinds of cancer. 9. Bed-sore. Dry gangrene. 10. Rheumatic carditis. Rheumatic synovitis. Rheumatic meningitis.
ORDER TWO. — TUBERCULAR.	
II. Two. — 1. Scrofula. 2. Tabes mesenterica. 3. Phthisis (pulmonary). 4. Hydrocephalus. 5. Tubercular meningitis.	II. Two. — 1. Psoas (lumbar) abscess. White swelling. Cretinism (goitre). Adenetis. Morbus coxarius. Pott's disease. 2. Tubercular peritonitis. 3. Hæmoptysis.

CLASS III. — LOCAL DISEASES.

TABULAR LIST.	SUPPLEMENTAL LIST.
ORDER ONE. — NERVOUS SYSTEM. III. One. — 1. Cephalitis. 2. Cerebritis. 3. Apoplexy. 4. Paralysis. 5. Insanity. 6. Chorea. 7. Epilepsy. 8. Tetanus. 9. Convulsions. 10. *Brain diseases.**	III. One. — 1. Phrenitis. Meningitis. Cerebro-spinal meningitis (sporadic). 5. Monomania. Fright. Grief. Melancholia. Dementia. Rage. 6. Hysteria. 8. Laryngismus. Lockjaw. Trismus nascentium. 10. Neuralgia cerebral. Neurasthenia. Disease of spinal cord. Necrencephalus (ramollissement). Thrombosis, cerebral.
ORDER TWO. — CIRCULATORY SYSTEM. III. Two. — 1. Pericarditis. 2. Aneurism. 3. *Heart diseases.**	III. Two. — 1. Carditis. Endocarditis. 3. Hypertrophia. Atrophia. Angina pectoris. Syncope. Arteritis. Ossification of arteris. Phlebitis. Hydropericardium. Embolus. Thrombosis.
ORDER THREE. — RESPIRATORY SYSTEM. III. Three. — 1. Epistaxis. 2. Laryngitis. 3. Bronchitis, acute. 4. Bronchitis, chronic. 5. Pleurisy. 6. Pneumonia. 7. Asthma. 8. *Lung diseases.**	III. Three. — 2. Œdema glottidis. 5. Empyema. Diaphragmitis. Pneumothorax. Hydrothorax. 6. Pulmonary apoplexy. Hæmoptysis.† Congestion of lungs. 7. Grinders' asthma. Miners' asthma. Emphysema.
ORDER FOUR. — DIGESTIVE SYSTEM. III. Four. — 1. Gastritis. 2. Enteritis. 3. Peritonitis. 4. Ascites.	III. Four. — 1. Glossitis. Stomatitis. Pharyngitis. Œsophagitis. 2. Gastro-enteritis, } Not infantile. Entero-colitis, }

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* Not otherwise placed.

† See Class II, Order Two — 3, Sup. List.

CLASS III.—LOCAL DISEASES—*Continued.*

TABULAR LIST.	SUPPLEMENTAL LIST.
ORDER FOUR.—DIGESTIVE SYSTEM—*Continued.*	
5. Ulceration of intestines.	5. Perforation of.
6. Hernia.	6. Congenital. Femoral. Inguinal. Scrotal. Umbilical. Ventral.
7. Ileus.	7. Constipation. Obstipation. Perityphlitis. Typhlitis.
8. Intussusception.	
9. Stricture of intestines.	9. Strict œsophagus.
10. Fistula.	
11. *Stomach diseases.**	11. Dyspepsia. Pyrosis. Gastralgia. Hæmalemesis. Melæna.
12. *Pancreas diseases.**	
13. Hepatitis.	
14. Jaundice.	14. Gall-stones.
15. *Liver diseases.**	15. Cirrhosis.
16. *Spleen diseases.**	
17. *Bowel diseases.**	
ORDER FIVE.—URINARY SYSTEM.	
III. Five.—1. Nephritis.	
2. Ischuria.	
3. Nephria (Bright's disease).	III. Five.—3. Albuminuria.
4. Diabetes.	
5. Calculus (gravel, etc.).	
6. Cystitis.	6. Cystirrhœa.
7. Prostate, disease of.	
8. *Kidney diseases.**	8. Diuresis. Hæmaturia. Uræmia.
9. Bladder, diseases of.*	9. Urethritis.
10. Testicles, disease of.	10. Orchitis.
ORDER SIX.—GENERATIVE SYSTEM. FEMALE.	
III. Six.—1. Ovarian dropsy.	III. Six.—1. Ovarian tumor.
2. *Diseases of uterus.**	2. Hysteritis metritis. Uterine uteri. Polypus tumor. Ovaritis. Pelvic cellulitis.

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* Not otherwise placed.

CLASS III. — LOCAL DISEASES — *Continued.*

TABULAR LIST.	SUPPLEMENTAL LIST.
ORDER SEVEN. — OSSEOUS AND LOCOMOTORY SYSTEM.	
III. Seven. — 1. Bones, diseases of. 2. *Joint diseases.** 3. Vertebræ, diseases of.	III. Seven. — 1. Ostitis. Periostitis. Fragilitas ossium. Mollities ossium. Rickets. Caries, necrosis. Exostosis. 2. Synovitis. Hip disease.‡ 3. Spine disease. Spine, caries and necrosis.
ORDER EIGHT. — INTEGUMENTARY SYSTEM.	
III. Eight. — 1. Phlegmon.† 2. Ulcer. 3. *Skin diseases.**	III. Eight. — 1. Abscess, part not stated. Boil. Whitlow. 3. Roseola. Urticaria. Eczema. Herpes. Pemphigus. Ecthyma. Impetigo. Psoriasis, etc. Dermatitis (from burns, etc.).
ORDER NINE. — ORGANS OF SPECIAL SENSE.	
EYE AND EAR.	
III. Nine. — 1. Malignus oculi. 2. Ophthalmitis. 3. Ossis petrosis. 4. Otitis.	

CLASS IV. — DEVELOPMENTAL DISEASES.

ORDER ONE. — DEVELOPMENTAL DISEASES OF CHILDREN.	
IV. One. — 1. Still-born. 2. Debility, infantile. 3. Debility, premature birth. 4. Cyanosis. 5. Spina bifida.	IV. One. — 2. Asthenia. 4. Atelectasis pulmonum. 6. Anus imperforatus. Cleft palate. Idiocy. 8. Malnutrition.

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* Not otherwise placed.

† See Class I, Order One — 10, Sup.

‡ See Class II, Order Two — 1, Sup.

Class IV. — Developmental Diseases — *Continued.*

TABULAR LIST.	SUPPLEMENTAL LIST.
Order One. — Developmental Diseases of Children — *Continued.*	
6. Other malformations.	
7. Teething.	
8. Innutrition.	
Order Two. — Developmental Diseases of Women.	
IV. Two. — 1. Paramenia.	IV. Two. — 1. Amenorrhœa. Chlorosis.† Climacteria. Menorrhagia.
2. Childbirth.*	2. Miscarriage. Abortion. Puerperal mania. Puerperal convulsions. Phlegmasia dolens. Cæsarian operation. Extra-uterine fœtation. Flooding. Retention of placenta. Presentation of placenta. Deformed pelvis. Mammary abscess.
Order Three. — Developmental Diseases of Old People.	
IV. Three. — 1. Old age.	
Order Four. — Diseases of Nutrition. Adolescent and Adult.	
IV. Four. — 1. Atrophy.	IV. Four. — 1. Marasmus. Malnutrition.
2. Debility.	2. Asthenia. Exhaustion.

Class V. — Violent Deaths.

Order One. — Accident or Negligence.	
V. One. — 1. Fractures and contusions.	V. One. — 1. Railroad and other accidents.
2. Wounds, unspecified.	
3. Burns and scalds.	
4. Poison.	
5. Drowning.	5. Lost at sea.
6. Suffocation.	6. Asphyxia. Strangulation.
7. Various.	7. Exposure. Cold water. Frozen. Heat. Lightning. Surgical operation.

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* See Class I, Order One — 22, Tab. List.

† See Class II, Order One — 3, Sup.

CLASS V. — VIOLENT DEATHS — *Continued.*

TABULAR LIST.	SUPPLEMENTAL LIST.
ORDER TWO. — HOMICIDE.	
ORDER THREE. — SUICIDE.	
V. Three.—1. Wounds, unspecified. Wounds, pistol or gunshot. Wounds, knife. 2. Poison. 3. Drowning. 4. Hanging. 5. Otherwise.*	V. Two.—1. Infanticide. Patricide. Matricide. Fratricide. Filicide, etc.
ORDER FOUR. — VARIOUS.	
V. Four.—1. Unclassified. 2. Cause not specified.	

* Manner stated.

SUGGESTIONS CONCERNING PHYSICIANS' CERTIFICATES OF DEATH.

It should be the endeavor to specify the causes of death as definitely and correctly as possible. It is not unusual to find a return of death with the physician's certificate naming the cause of death "Paralysis," "Paraplegia," "Fits," "Convulsions," "Dropsy," etc., which are merely secondary or consecutive causes, simply symptoms only, or results of some organic lesion or pathological derangement. Sometimes the alleged cause is really the final cause, as in a case of termination of life by paralysis, but the cause given as paralysis is not the determining cause. Apoplexy, or some lesion of the nervous centers, must be the original and determining cause of paralysis, paraplegia, hemiplegia, etc., and the determining cause should be stated as the primary in the return or certificate.

Convulsions are the symptoms or results of some antecedent or concurrent disease. They follow meningitis and other structural lesions of the nervous centers; they also occur from reflex derangement or disturbance of the nervous centers, as, in children, from intestinal irritation, or from inflammation, as in gastritis, enteritis, nephritis, etc. In such cases they may be contributory to death, and perhaps, in rare instances, a final cause, by inducing or taking the form of tonic or tetanic spasm. But as contributory, or as a final cause, they are simply concomitant, and are not unfrequently manifestations of the desperate efforts of expiring vitality to regain original and normal control. They should find place as secondary causes only in certificates of death.

"Fits" is too unmeaning a term to be used in any case. The word in a medical sense literally means an attack, an occurrence, or succession of attacks of some physical or mental disturbance, as "fits of sickness," "fits of melancholy," etc., and is not properly used as synonymous with convulsions from any cause. It would be just as sensible to attribute a death to an "occurrence" or an "attack" as a cause, as to "fits," without other qualification.

"Dropsy" and "ascites" have been allowed to stand as determining causes of death because of extended use, and because of the obscurity with which their causes in rare instances are involved. We can scarcely conceive of a dropsical accumulation without antecedent organic or functional disorder, derangement of the absorbent or secretory system, or depravation of the blood. They are left in the tabular list with not a little reluctance. Paralysis is also left in the tabular list for a like reason, and with the same doubt of propriety.

"Inflammation" does not in any way define the cause of death. The organ or organs affected should be mentioned, or else the death must remain unclassified.

"Hemorrhage" is sometimes returned as a cause, but unless accompanied by a further statement no inference can be drawn as to the real cause of death. The suicide who cuts his throat frequently dies of hemorrhage; sometimes the patient with typhoid fever succumbs from the same cause, yet to report "hemorrhage" as the cause of death would leave the actual cause in obscurity.

It may be suggested that it is sometimes difficult, and occasionally impossible, to ascertain positively the chief or leading cause of death. The physician last in attendance may find several functional or structural diseases, the morbid conditions multiple and complex, and not only the initial derangement, but the succession of morbid processes — proximate, consecutive, and ultimate — inextricably entangled and lost to discovery.

The careful diagnostician will, however, even then be able to conceive the probable leading cause, but, whether or not, he will be able at least to ascertain the most prominent and controlling lesion or functional derangement then existing, and which may reasonably be accepted as the primary cause of death.

The preceding remark applies very properly to cases of adventitious diseases which prove fatal, when occurring in individuals already suffering from some chronic disease of slower progress, as when fatal dysentery attacks a consumptive person, or one having chronic nephritis dies from pneumonia. The acute disease occurring independently of the chronic disease is the chief cause of death, although the fatal event may have been made more sure by the existence of the antecedent disease, and although the antecedent disease would have ultimately caused death.

In attributing death to scrofula, tuberculosis, tumor, cancer, abscess, and other generic terms as causes, the organic structure or locality where the disease is developed should always be given, otherwise such terms are very indefinite, and discredit the acquirements of the certifying physician.

The objects desired in presenting the preceding nomenclature of causes of death, and the suggestions following, are to subserve the purpose of greater uniformity in the use of nosological terms, and to promote the accomplishment of entire definiteness, accuracy, and completeness in the physicians' certificates of causes of death.

THE NEW HAMPSHIRE REGISTRATION LAW.

AN ACT FOR THE BETTER REGISTRATION OF BIRTHS, MARRIAGES, AND DEATHS.

Be it enacted by the Senate and House of Representatives in General Court convened:

SECTION 1. The secretary of the State Board of Health shall be the registrar of vital statistics for the State, and shall furnish to sextons, to clergymen, and others authorized to marry, to physicians, town-clerks, and clerks of the society of Friends, a copy of this act, and suitable blanks for recording births, marriages, and deaths, so printed with appropriate headings as readily to show the following facts and such others as may be deemed necessary to secure an accurate registration:

I. The record of a birth shall state its date and place of occurrence, full Christian and surname (if named), color and sex of child, whether living or still-born, and the full Christian and surnames, color, occupation, residence, and birthplace of parents.

II. The record of a marriage shall state its date and place of occurrence, the name, residence, and official character of the person by whom solemnized, the full Christian and surnames of the parties, the age, color, occupation, and residence of each, the condition (whether single or widowed), whether first, second, or other marriage; and the full Christian and surnames, residence, color, occupation, and birthplace of their parents.

III. The record of a death shall state its date, the full Christian and surname of the deceased, the sex, color, condition (whether single or married), age, occupation, place of birth, place of death, the full Christian and surnames and birthplaces of parents, and the disease or cause of death.

SECT. 2. The attending physician, accoucheur, midwife, or other person in charge, who shall attend, assist, or advise at the birth of any child, living or still-born, within the limits of any town or city in this State, shall report to the clerk of such town, within six days thereafter, all the facts regarding such birth, as is required in section one of this act.

Sect. 3. Every person authorized to unite persons in marriage shall make a record of every marriage solemnized before him, in conformity with the requisitions prescribed for blank records of marriages in section one of this act, and shall within six days thereafter deliver or forward to the clerk of the town in which the marriage intention was recorded a copy of such record of marriage.

Sect. 4. Whenever any person shall die, or any still-born child shall be brought forth in this State, the physician attending at such bringing forth, or last sickness, shall fill out and deliver to the undertaker, town-clerk, or other person superintending the burial of said deceased person, a certificate, duly signed, setting forth, as far as may be, the facts required in the record of a death, according to section one of this act; and it shall be the duty of the undertaker, or other person having charge of the burial of said deceased person, to add to said certificate the date and place of burial, and having duly signed the same, to forward it to the clerk of the town or city, and obtain a permit for burial; and in case of any contagious or infectious disease, said certificate shall be made and forwarded immediately.

Sect. 5. In the case of any deceased person not having had the attendance of a physician in his or her last sickness, the town-clerk may issue and sign the certificate of death, upon presentation of such facts as may be obtained of relatives, persons in attendance upon said deceased person during said last sickness or present at the time of death, and the permit for burial shall be issued upon such information.

Sect. 6. No interment or disinterment of the dead body of any human being, or disposition thereof in any tomb, vault, or cemetery, shall be made without a permit as aforesaid, nor otherwise than in accordance with such permit. No undertaker or other person shall assist in, assent to, or allow any such interment or disinterment to be made, until such permit has been given as aforesaid; and it shall be the duty of every undertaker or other person having charge of any burial place as aforesaid, who shall receive such permit, to preserve and return the same to the clerk of the town within six days after the day of burial.

Sect. 7. The town-clerk may appoint suitable and proper persons, not exceeding two in number in any town, as sub-registrars, who shall be authorized to issue burial permits based upon a death certificate, as hereinbefore provided, in the same manner as is required of the town-clerk; and the said record of death upon which the permit is issued shall be forwarded to the town-clerk within six days after receiving the same, and all permits by whomsoever issued shall be returned to the town-clerk, as required by section seven of this act. The appointment of sub-registrars shall be made with reference to locality, so as to best convenience the inhabitants of the town.

SECT. 8. The clerk of every town shall keep a chronological record of all births, marriages, and deaths reported to him, and shall annually, in the month of January, transmit a copy of the record of all births, marriages, and deaths occurring during the year ending December 31st next preceding such said report, to the state registrar, together with the names, residences, and official stations of all such persons as have neglected to make returns to him in relation to the subject-matters of such records, which the law required them to make.

SECT. 9. The state registrar shall cause the returns made to him in pursuance of the preceding section to be arranged, alphabetic indexes of all the names contained therein to be made, and the whole bound in convenient volumes and carefully preserved in his office. He shall annually make and publish a general abstract and report of the returns of the preceding year in such a form as will render them of practical utility, not more than one thousand copies of which shall be printed, one copy of which shall be forwarded to every town, one copy to each senator and representative, one copy to each State and Territory in the Union, and the remainder to such departments, libraries, and persons as the state registrar shall direct.

SECT. 10. The town-clerk's record of any birth, marriage, or death, or a duly certified copy thereof, shall be *prima-facie* evidence of such birth, marriage, or death, in any judicial proceeding.

SECT. 11. If any person shall willfully neglect or refuse to perform any duty imposed upon him by the provisions of this act, he shall be fined not more than one hundred dollars for each offence, for the use of the town in which the offence occurred, and it shall be the duty of the state registrar to enforce this section as far as comes within his power.

SECT. 12. The fees of physicians for making returns of each birth and death, as herein provided, shall be the same as are now in force; and the clerk of each city and town shall be paid by such city or town for receiving, recording, and returning the facts required to be recorded by this act, the sum of fifteen cents for each birth, marriage, and death.

SECT. 13. This act shall take effect and be in force on and after the first day of January, 1884; and all acts and parts of acts inconsistent with this act are hereby repealed.

[Approved September 7, 1883.]

AN ACT PROVIDING FOR A REPORT OF THE NUMBER AND CAUSES OF DIVORCES.

Be it enacted by the Senate and House of Representatives in General Court convened:

SECTION 1. That the clerks of the supreme court shall, at the close of each term in their respective counties at which divorces are granted, make return to the registrar of vital statistics of the number of divorces decreed at that term, the causes thereof, the sex of the libellant, and the day of the decree.

SECT. 2. That it shall be the duty of the registrar of vital statistics to consolidate said returns, and publish them with his report of births, marriages, and deaths.

SECT. 3. That chapter 12 of the Session Laws of 1881 be and hereby is repealed.

SECT. 4. That this act shall take effect upon its passage.

[Approved July 9, 1885.]

AN ACT FOR THE BETTER PRESERVATION AND PUBLICATION OF LOCAL VITAL STATISTICS.

Be it enacted by the Senate and House of Representatives in General Court convened:

SECTION 1. It shall be the duty of the clerks of towns and cities to furnish a transcript of the record of births, marriages, and deaths for each year, seasonably, to the proper municipal officers, for publication in the annual reports. The period to be annually covered by such transcripts and publication shall be fixed by regulation prescribed by the registrar of vital statistics for the State. Every printed annual town or city report shall contain a full and exact copy of such transcript for the town or city to which it relates.

[Approved October 6, 1887.]

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